THE IRON AGE

THURSDAY, JULY 18, 1901.

The Cornwall Ore Hills of Pennsylvania.

By the late transfer of certain interests in the Cornwall Ore Hills, near Lebanon, Pa., the control of this interesting and historical property practically passes from the descendants of Peter Grubb and Robert Coleman, although some of the descendants continue as part owners.

Until 1894 the Grubbs and Colemans held continuous ownership of the Cornwall Ore Hills for a century and a half, but some of the holdings have been divided into small fractions among descendants of the original proprietors of the third and fourth generations; fractions such that a denominator of 728 was necessary to represent them, although no individual or undivided interest was less than one ninety-sixth of the whole.

The financial difficulties which overcame Robert H. Coleman resulting in his interest being purchased by the Lackawanna Iron & Steel Company in 1894, was the initial break in the continuity of proprietary interests, and subsequently one of the Grubbs disposed of one ninety-sixth of the ore hills to the Pennsylvania Furnace Company, who operate the Sheridan blast furnaces, but the late transfer of some of the other shares to the Pennsylvania Steel Company practically divorces the family names so long associated with the Cornwall ore property from connection with it.

The claim that the scarcity of male descendants bearing the family names influenced the transfer is questionable, as this would not apply to several of the interests sold, whose male representatives were well maintaining the ancient reputation as ironmasters. But it is certain that two families which have been for over a century prominent in the iron industry of Pennsylvania seem to have sought other fields of activity, as least so far as this activity was represented by a controlling interest in the property and the use of mineral obtained from the Cornwall Ore Hills.

The Grubb Family.

Peter Grubb, about 1732, was sole owner of the Cornwall Ore Hills, he having purchased about 300 acres at the rate of $2.25 per acre, the present known iron ore bearing territory comprising about one-fifth of this purchase. But Robert Coleman, originally an employee of Peter Grubb, ultimately secured five-sixths, leaving to Peter Grubb's heirs one-sixth interest. This one-sixth has been held by subdivision among the descendants of Peter Grubb, until the sale of one ninety-sixth to the Pennsylvania Furnace Company, and the late transactions, when members of the family sold ten ninety-sixths to the Pennsylvania Steel Company, leaving to the Grubb family five ninety-sixths.

The sixteen ninety-sixths referred to as held by the Grubbs had been divided equally between two families, the members of which represented from one to three and one-half ninety-sixths.

To within a few years ago the Grubb name was prominent in the ownership and operation of blast furnaces, and some of the family are still interested as partners in such enterprises; but to-day there is no recognized Grubb furnace, as there are evidently to be no recognized Coleman furnaces.

The Coleman Family.

Robert Coleman's five-sixths interest passed from sons to grandsons, until one family represented by two grandsons owned fifty ninety-sixths, and another branch represented by two grandsons owned thirty ninety-sixths, the Grubbs controlling the remaining sixteen ninety-sixths, or one-sixth interest, as above outlined.

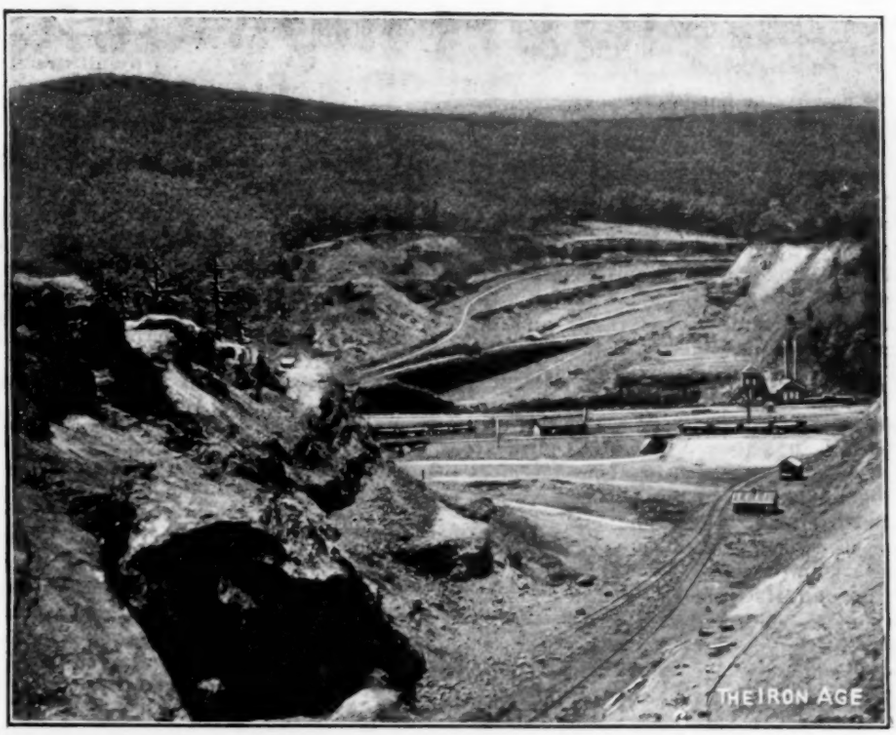

Fig. 1.—View from Top of Big Hill, Looking Over Middle Hill, Grassy Hill in the Distance.

THE CORNWALL ORE HILLS OF PENNSYLVANIA.

The Lackawanna Iron & Steel Company, in 1894, purchased from the only male Coleman (Robert H.) interested in the larger holding of fifty ninety-sixths his interest, which was one-half of his father's twenty-five ninety-sixths, and one-eighth of his uncle's twenty-five ninety-sixths, making a total of fifteen and five-eighths ninety-sixths, of one hundred and twenty-five seven hundred and sixty-eighths, equivalent to 16.28 per cent. of the whole.

The sister of Robert H. Coleman lately sold her proportion, equal to her brother's (fifteen and five-eighths ninety-sixths) to the Pennsylvania Steel Company. The balance of the uncle's twenty-five ninety-sixths, which was divided among his legal heirs, has been in the names of six descendants, three men and three women, none, however, bearing the Coleman name, each possessing directly, or by trust, three and one-eighth ninety-sixths, or twenty-five seven hundred and sixty-eighths, equivalent to 3.25 per cent. of the whole.

Of the two Coleman brothers of the other branch, whose combined interest was thirty ninety-sixths, one died in Europe, leaving a son who survived him but a brief time, and the litigation as to whether the widow of the father, the widow of the son, or the eldest son of the other brother, should be the beneficiary of fifteen ninety-sixths interest in the Cornwall Ore Hills, has been contested in the courts of two continents for years, the interest being now in the hands of a trustee.

To distinguish this portion it will be referred to as owned by the Coleman heirs in France. It was not included in the late transfer, but the fifteen ninety-sixths interest held by the G. Dawson Coleman heirs was sold to the Pennsylvania Steel Company.

The heirs of the late G. Dawson Coleman were active in the Cornwall Ore Bank Company and continued to operate the North Lebanon furnaces up to July 1, 1901, when the furnaces, tenements, water rights and the adjacent lands and the estate's interest in the Cornwall Ore Hills passed into the possession of the Pennsylvania Steel Company.

Many interested in the iron industry regret this sale as possibly removing an active, progressive spirit, B. Dawson Coleman, whose faith brought about the erection of the first large furnace in the Lebanon Valley, equipped with labor saving devices and gas roasting kilns, at a time when depressed business discouraged others from making improvements.

To Mr. Coleman and other members of his family credit is due for this evidence of progress and also for the liberal application of Cornwall pig iron to open hearth steel production. It is understood that Mr. Coleman will continue, temporarily, to manage for the purchasers the interests which he has been instrumental in disposing of.

The foregoing recital prepares the way for a consideration of the present ownership of the Cornwall Ore Hills, which will be divided into 768 parts, to avoid expressing interests in whole numbers and fractions.

Present Ownership of the Cornwall Ore Hills.

	Shares.
Pennsylvania Steel Company	325
Lackawanna Iron & Steel Company	125
Coleman descendants in America	150
Coleman descendants in France	120
Grubb descendants	40
Pennsylvania Furnace Company	8
Total	768

It will thus be seen that the Pennsylvania Steel Company and the Lackawanna Iron & Steel Company, combined, have control of the Cornwall Ore Banks, but that neither one has independently the power to dictate the policy of management.

In addition to their direct ownership the Lackawanna Iron & Steel Company have the assured co-operation of the Coleman descendants in America, still represented by holdings in the ore hills, whose blast furnaces the company have leased for 20 years. This assurance represents one hundred and twenty-five and possibly one hundred and fifty seven hundred and sixty-eighths of the whole.

The voting power may then be recapitulated as:

	Shares.
The Pennsylvania Steel Company	325
The Lackawanna Iron & Steel Company, 250 and possibly	275
Coleman descendants in France	120
Grubb descendants	40
Pennsylvania Furnace Company	8
Total	768

To control the policy of the ore banks, the Pennsylvania Steel Company must add sixty seven hundred and sixty-eighths, or the Lackawanna Iron & Steel Company one hundred and ten and possibly one hundred and thirty-five seven hundred and sixty-eighths; this uncertainty is owing to the doubtful status of one of the Coleman heirs in America.

It would, therefore, appear that if either of the large companies wish to dictate the operations of the ore banks, the co-operation of the Coleman heirs in France would be the objective. But it is more than probable that by harmonious action the Pennsylvania Steel Company and Lackawanna Iron & Steel Company will dominate the policy, and it is questionable whether those who have not parted with their holdings would consider a rate lower than that established by the purchases made by these companies, particularly as the purchases of 1901 have been practically an advance over those of 1894.

Value of the Cornwall Ore Hills.

This naturally suggests the value of the property as determined by these sales. The consideration paid to the heirs of G. Dawson Coleman by the Pennsylvania Steel Company, and approved by court, was $2,025,000 for fifteen ninety-sixths interest in the Cornwall Ore Hills, or at the rate of $135,000 for one ninety-sixth. It is also understood that Mrs. Rogers' interest was sold on the same basis. This was the rate, per share, at which the Lackawanna Iron & Steel Company purchased fifteen and five-eighths ninety-sixths in 1894, and since that date about 3,500,000 tons of ore have been mined.

The figures indicate that the value placed upon the ore deposit is about $13,000,000. But as all the interests represented by the Coleman descendants must jointly account to the Grubb descendants for the ore taken by the Robesonia Iron Company, Limited, under a grant which permits this company, as the successor of the original grantee, to mine ore for one furnace in perpetuity, it is understood that the rate paid the Grubb family for ten ninety-sixths was at a higher basis of valuation.

However, taking the gross value of the property at $13,000,000, and allowing for interest and sinking fund of but 6 per cent. per annum, the property should pay its owners a profit of $780,000 annually. This would mean an equivalent for royalty of over $1 per ton on the maximum yearly product of the Cornwall Hills, or $1.40 per ton upon the average annual output for the past decade.

This statement suggests that having by their purchases secured a reliable basis of ore supply, the interest of the two large companies would be in harmony, and that there is little prospect of their bidding against each other for shares still held by descendants of the Grubbs and Colemans.

Future Policy.

The proprietary rates for ore which formerly existed have been superseded by the establishment from time to time of fixed rates, at which all parties must account to the Cornwall Ore Bank Company for ore purchased from them. These rates have varied from 70 cents to $2.25 per ton, and are at present $1.25 per ton.

While the purpose of the majority holding has not been made public, there is apparent ground to anticipate that the interests now controlling the Cornwall Ore Hills will pursue a policy of active development to increase the earning capacity, and that this increase will be in the direction of augmented output rather than of higher prices for ore won. On the other hand, a decrease in price below the minimum mentioned would suggest unprofitable operation of the ore hills as a mining problem, and would antagonize some minority interests.

The possession of a source of ore supply has certainly a money value to a steel company, which may be expressed in dollars, and which may be omitted in estimating assets, but the policy of good management will undoubtedly be such as to earn wherever possible interest on the capital represented by the purchase price, to provide a sinking fund sufficient to reimburse the investment when the ore reserves, as now estimated, are exhausted, and to secure a profit on mining.

That the Cornwall reserves are great is unquestioned, and in late years considerable explorations by diamond drill were made, with the result that the ore horizon is enlarged beyond what was formerly accepted. But the limits of the ore body in the Big Hill are, apparently, determined, and the quantity above present working level in this section of the deposit does not promise an extended future. However, the virgin ground between the Big Hill and Middle Hill, now occupied by wagon and rail roads and creek, will be attacked in the near future, as proceedings have been commenced to vacate the turnpike. Beyond this the workings of the Robesonia Iron Company, Limited, have extended about 100

Fig. 2.—View of Middle Hill with Big Hill in Distance.

Fig. 3.—The Robesonia Cut.

THE CORNWALL ORE HILLS OF PENNSYLVANIA.

feet below water level, and are bottomed in ore. Further west the same body, evidently, continues through Middle Hill to Grassy Hill, where it is now being uncovered.

The excellent photographs made by Paul Grittinger of Cornwall give a better idea of the present status of mining operations than any descriptive texts, and illustrate the reserves above present working levels. Below these the ore proven by bore holes demonstrates the large reserves in the Cornwall Ore Banks. The expectation that the ore body extends below the sandstones of the South Mountain is based upon similar explorations.

In *The Iron Age* of October, 1894, there appears a history and general description of the Cornwall Ore Banks, the division of ownership as it then existed, the organization of the Cornwall Ore Banks Company, and a general description of the ore and its characteristics. A very full description by E. V. d'Invilliers appears in the

Fig. 4.—View of Middle Hill, Robesonia Cut in Foreground.

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"Transactions" of the American Institute of Mining Engineers, Vol. XIII.

To increase the production from this deposit large reserves are requisite, for, as shown later, the Cornwall Ore Hills, while having produced iron ore continuously for more than a century and a half, and ranking first among American iron ore mines as a producer, have supplied one-half of the total in the last 15 years. An examination of the immensity of the excavations, made mostly by hand labor, which represent the product of sixteen and a third million tons, suggests what may be expected in the future with an increased output won by advanced appliances. Such examination will also bring up the problem of future methods of exploitation and the possible limitations of continuing operations in the open.

As before shown, an augmented production seems essential to obtain mineral at a rate which will give the majority owners ore at prices which permit of economically operating their furnaces.

Character and Cost of Ore.

As compared with most of the ores used by American blast furnaces, that obtained from the Cornwall Hills is lean; as now mined it averages probably 46 per cent. of iron. Improved gas roasters make it possible to increase somewhat the percentage of iron and, what is more important, to reduce the 2 per cent. of sulphur (the average in the raw ore) to about 0.6 per cent. The presence of 0.75 to 1 per cent. of copper gives the ore an unenviable reputation, which actual use has to a large extent overcome.

The uniformly low phosphorus in Cornwall ore, however, adds materially to its value. But the moderate content of metallic iron will discourage heavy transportation charges and confine the use of this ore to nearby furnaces.

Roasting at the mines would permit the distribution of the ore covering a larger area, but a large allowance to cover royalty, equated upon the interest and sinking fund charges on the purchase price paid for parts of the property, would in turn advance the cost of pig iron.

Mining need be but a small factor in the cost of Cornwall ore, and although highway and railroad charges, pumping and hoisting from below water level, heavy stripping for deep cuttings or underground work may increase the expense of mining ore in the near future, there is ample reason to believe that an average mining charge of 25 to 30 cents per ton need not be exceeded for years. As the Lackawanna Iron & Steel Company have the assured co-operation of those who control the Cornwall Railroad, and the Pennsylvania Steel Company own the controll of the Cornwall & Lebanon Railroad, in which the Lackawanna Iron & Steel Company also have about one-third interest, and as both of these railroads have tracks connected to the ore hill system, there seems additional reason for co-operation in the virgin field referred to.

The Robesonia Grant.

The status of the Robesonia grant may present some interesting features in the light of late changes in ownership of the Cornwall Ore Hills, and the question of what is merchantable ore may possibly receive a new interpretation. Having been accorded, after protracted litigation, the right to enter upon the Cornwall Ore Hills and take therefrom ore sufficient for one furnace, independent of the size of the stack, the Robesonia Iron Company, Limited, have been operating at the eastern end of the Middle Hill, below water level, and have been

shipping ore, which some of the other users claim to be superior to what the Cornwall Ore Bank Company have supplied their customers. It is also reported that some of the ore shipped to consumers has been received under protest or piled for future accounting, because of its amount of money, covering this accounting, has lately been withheld, in the expectation that by a renewal of litigation some limitation of this valuable grant may be established.

If, as is presumed, the Pennsylvania Steel Company,

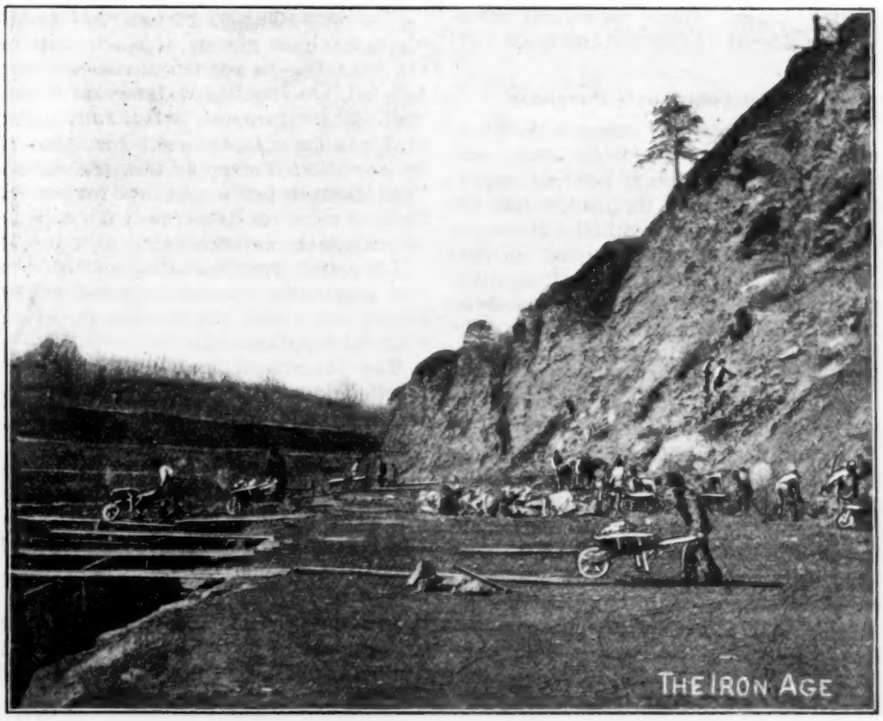

Fig. 5.—Cleaning Pockets of Trap Rock in Middle Hill.

Fig. 6.—Cut in Middle Hill, Bird Coleman Furnaces in Distance.

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leanness. When the scheduled price of Cornwall ore was advanced to $2.25 few of the users found any return in operating their furnaces and most of them were blown out, but as long as the Robesonia Iron Company, Limited, mined ore the original Coleman five-sixths interest accounted to the original Grubb one-sixth interest for all ore so taken. It is understood that a considerable in purchasing interests in the Cornwall Ore Hills, secured all the rights and privileges or assumed all the liabilities of the vender, then, having purchased five-eighths of the Grubb interest, they will receive five-eighths of all the money paid for the ore taken by the Robesonia Iron Company, Limited, the Grubb heirs receiving five-sixteenths and the Pennsylvania Furnace Company one-

sixteenth. But in charging this Robesonia ore against the Coleman interests the Pennsylvania Steel Company must, as purchasers of some of these, be responsible for 38.28 per cent., the Lackawanna Iron & Steel Company 19.53 per cent., the Coleman heirs in France 18.75 per cent., and the Coleman heirs in America, who have one-half interest in the Robesonia Iron Company, Limited, 23.44 per cent. of this charge. Hence in several cases the money may be considered as paid by one hand and received by the other.

The Pennsylvania Steel Company's Purchase.

The late purchase made by the Pennsylvania Steel Company embraces, in addition to 42.3 per cent., the interest in the Cornwall Ore Hills already referred to, the control of the Cornwall & Lebanon Railroad, a line 22 miles in length, connecting Lebanon with the Pennsylvania Railroad at Conewago, 15 miles east of Harrisburg, and passing close to the Cornwall Ore Hills, with connections to the workings. It also includes the two North Lebanon furnaces, one quite new and thoroughly equipped, with some valuable contracts for pig iron. The purchase embraces in addition about 500 acres of land, much of it well adapted by topography and railroad facilities for industrial works, a number of tenements and an important water right. Lebanon being close to the divide between the watersheds of the Schuylkill and Susquehanna rivers, large reservoirs were constructed to supply the summit level of the Union Canal (now abandoned), and it is these water rights which the G. Dawson Coleman heirs acquired, which were sold to the Pennsylvania Steel Company, with the furnaces and lands. The price paid for these properties approximates that paid for the fifteen ninety-sixths interest in the ore hills.

The Lackawanna Iron & Steel Company.

The share in the Cornwall & Lebanon Railroad held by the Lackawanna Iron & Steel Company has additional value in view of the company's interest in the ore hills, and the company also have the advantage of the assured co-operation of those who control the Cornwall Railroad, with a length of about 12 miles from Lebanon to Mount Hope, the main line of which passes between the Big and Middle hills, with connections to all parts of the workings. This railroad was originally constructed to convey ore from Cornwall to the Union Canal, near Lebanon, and operates in harmony with the Philadelphia & Reading system.

The Lackawanna Iron & Steel Company own two blast furnaces (the Colebrook plant at Lebanon), and have leased from the few Coleman heirs in America, who still have interests in the ore hills, three blast furnaces—the Bird Coleman and the North Cornwall group—for 20 years. All five furnaces are now in blast, using Cornwall ore, but at the time the price was raised to $2.25 per ton the Lackawanna Iron & Steel Company brought a large amount of Lake Superior ore to their furnaces, thus paraphrasing "carrying coals to Newcastle" to "carrying ore to Cornwall." It is understood that in leasing the three plants near the Cornwall Ore Hills to the Lackawanna Iron & Steel Company an agreement was made by the lessors to vote their ore bank shares in harmony with the Lackawanna Iron & Steel Company's interests, provided the price of ore was not forced below the former minimum of 70 cents at the mine, and the lessors agree to provide an outlet to the Pennsylvania Railroad if necessary. These furnace leases are upon a rental based upon the selling price of Bessemer steel rails, but with a yearly minimum fixed.

The Present Status.

The present status of affairs may be epitomized as follows: Several descendants of Peter Grubb and Robert Coleman, or those who inherit interests by marriages of such descendants, now hold but 40 per cent. of the Cornwall Ore Hills, and while some are connected with blast furnaces, there are now none operated and owned either by a Grubb or a Coleman. Sixty per cent. interest in the Cornwall Ore Hills is the property of manufacturing companies, and about one-half of the interest retained by the Coleman heirs is pledged to support the policy of one of the large steel companies, so that the domination by active iron and steel interests is represented by practically 80 per cent. of the ownership.

The two railroads which tap the ore hills are controlled by one of the steel companies, who purchased from the heirs of the original proprietors, or by interests which will act in harmony.

The controlling interests in the ore hills own or operate under lease a score of blast furnaces convenient to the ore hills. In addition the Robesonia Iron Company, Limited, are supplied under grant with ore from Cornwall. These furnaces, when fully equipped and operated, can draw on Cornwall for about 1,500,000 tons of ore annually. To supply these furnaces and reduce the fixed charges per ton of ore for interest and sinking fund on purchase investment, an increased output may be reasonably anticipated.

The large preponderation of interest active in pig iron production may be expected to favor methods of sorting ore which will increase the average yield of the material supplied to the furnaces.

The investment made and those promised in gas roasting kilns and in by-product coking ovens at the Lebanon Valley furnaces are indications of the assured permanence of the industry.

The Lackawanna Iron & Steel Company are erecting at their Colebrook furnaces a plant of 232 Otto-Hoffmann ovens, from which it is expected to obtain 1100 tons of coke per day, the coal being brought by rail from Indiana County, Pa.

The G. Dawson Coleman heirs, prior to the sale of their furnaces, were preparing to erect a Semet-Solvay coking plant to produce 600 tons per day, the expectation being to reduce the cost of coke fully $1 per ton.

The Production of Ore.

The production of the Cornwall Ore Hills, a matter of considerable interest in connection with the late transfers, may be summarized as follows: Prior to 1879 250,000 tons of iron ore had not been won in any year from the Cornwall Ore Hills, but since that date the deposit has, with two exceptions, exceeded this annual output. The outputs of the Cornwall mines for the last 20 years appear in a table, which also indicates the aggregate record prior to 1881, so as to show the total contributed by the Cornwall Ore Hills and the relation which the later developments bear to this total.

Production of Iron Ore from the Cornwall Ore Hills.

Year.	Tons.	Year.	Tons.
From 1740 to 1880, inclusive	5,468,680	1890	686,302
1881	249,050	1891	663,746
1882	309,681	1892	634,714
1883	363,144	1893	439,705
1884	412,320	1894	371,710
1885	508,864	1895	614,598
1886	688,054	1896	463,059
1887	667,210	1897	419,468
1888	722,917	1898	584,341
1889	*769,020	1899	763,152
		1900	558,713
Total amount mined since 1740			16,358,448

*Maximum.

It will be noted from the above that one-half the total output has been won since 1886, and that one-third of this total has been supplied in the last decade, 1891-1900.

Interesting features of the statistics are that the total for the last decade exceeds but little the decade preceding and that the entire product is divided into three practically equal portions, as follows:

	Tons.
1740 to 1880 (140 years)	5,468,680
1881 to 1890 (10 years)	5,376,562
1891 to 1900 (10 years)	5,513,206
Grand total	16,358,448

While this grand total represents a large amount of iron ore, the combined annual output of the Lake Superior mines now exceeds the total yield of the Cornwall Hills in 160 years. This indicates the enormous development of the lake mines, but their influence upon the in-

dustry of the country is emphasized by the fact that the richer Lake Superior ores enable them to produce more pig metal per ton than the mineral from the Cornwall mines.

The influence exerted by mineral won from the Cornwall Ore Hills may not, however, be gauged solely by quantity or quality, for it was an important factor in the early development of the American iron industry, and later it contributed liberally to the advancement of Bessemer steel manufacture. Owing, however, to the relatively lean character of the ores their utilization has been localized to a greater extent than the Lake Superior ores, but no single deposit in the United States has produced as much iron ore as the Cornwall Ore Hills, although since 1893 it has not ranked as the most important annual contribution to the country's supply.

To indicate the relation which the Cornwall Ore Hills have borne in the development of the iron and steel industry and the place occupied by it and other large mines, the following comparisons of total output and greatest annual shipments are offered:

Comparisons with Other Large Producers.

The group known as the Port Henry mines, near Port Henry, N. Y., comprising the operations of Witherbees, Sherman & Co. and the Port Henry Iron Ore Company, recorded as being first exploited in 1804, are estimated to have produced to 1900, inclusive, 12,000,000 tons of iron ore, the maximum annual production being about 500,000 tons, or two-thirds of the maximum Cornwall output.

The Vermillion range in Minnesota, including all the mines at or near Tower and Ely, had shipped a total in 17 years, to the close of 1900, of over 15,000,000 tons of iron ore, being 1,000,000 tons below the total production of the Cornwall Ore Hills in 160 years. The maximum shipment from the Vermillion range in 1899 was about 1,750,000 tons, or more than double the greatest yearly output of the Cornwall Ore Hills.

Considering individual mining operations for comparison, there are four on the south shore of Lake Superior region which are closely bunched as to production, easily distancing all competitors, all four being in Michigan—two, the Lake Superior Iron Company and Cleveland-Cliffs Iron Company, on the Marquette range, one, the Chapin, on the Menominee range, and the remaining one, the Norrie, on the Gogebic range. They take rank as shippers in the order named below:

The mines associated together as the Cleveland-Cliffs Iron Company, principally located near Ishpeming, Mich., contributed from 1849 to the end of the year 1900 12,964,460 long tons of iron ore, considerably less than the Cornwall Ore Hills total, but the maximum shipment, 1,011,048 long tons, in 1899, exceeded Cornwall Ore Hills' best year by 30 per cent.

The Chapin Mine, at Iron Mountain, Mich., which includes the Hamilton and Ludington openings, shipped from 1880 to the close of 1900 10,467,490 long tons of iron ore, the maximum 940,513 tons in 1899, being 22 per cent. in advance of the Cornwall Hills' maximum.

The Lake Superior Iron Company from their various shafts near Ishpeming, Mich., have shipped 9,649,452 long tons from the date of their opening in 1858 to the close of 1900, their maximum, 709,143 long tons in 1900, being below the highest Cornwall Ore Hills' record.

The Norrie Mine, near Iron Mountain, Mich., made their first shipment in 1885, and to the close of 1900 had contributed 8,962,170 long tons of iron ore, the maximum being 985,216 tons in 1892.

The rank as an annual producer held by the Cornwall Ore Hills as compared with other large American mines was: First in 1893, eighth in 1894, second in 1895, fifth in 1896, twelfth in 1897, third in 1898, fifth in 1899, twelfth in 1900.

The statements which indicate the relation the Cornwall Ore Hills bore to other prominent mines as a total contributor and a source of yearly supply of iron ore, may be supplemented by a *résumé* of the position which the Cornwall Ore Hills sustained to the annual production of the United States:

Production of Iron Ores in Census and Other Years.

Year.	Total for the United States. Gross tons.	Total for Cornwall Ore Hills. Gross tons.	Percentage of total represented by Cornwall Ore Hills.
1880	7,120,362	231,173	3.2
1889	14,518,041	769,020	5.3
1895	15,957,614	614,598	3.8
1899	24,683,173	763,152	3.0
1900	27,553,161	558,713	2.0

Illustrations.

Fig. 1 presents a general view of the mining operations of the Cornwall Ore Hills, taken from the edge of the deep cut in the Big Hill, and looking west over the excavations in Middle and Grassy hills, with the South Mountain rising to the left, under which the ore body is believed to dip. The hoisting plant for the Robesonia excavation, at the foot of Middle Hill, is seen to the right, but only the upper part of the western ore face of this excavation is visible. Beyond is the uncovered ore. The ground between the Big and Middle hills and all the visible floors of the workings are ore.

Fig. 2 may be considered as a companion view to Fig. 1. The observer, standing on the ore about the center of Middle Hill, looks east over the workings of this hill, the Robesonia excavation and into the deep cut of the Big Hill. The ore body of Grassy Hill is behind the observer.

Figs. 3 and 4 are companion views of the Robesonia excavation, the former showing the eastern wall left to support the railroad and the hoisting plant; the observer looks northeast. In Fig. 4 the observer is on the railroad looking nearly west into the Robesonia excavation and to the Middle Hill workings beyond. It is in fact a near view of a portion of Fig. 1.

Fig. 5 is a closer view of the trap rock which forms the northern boundary of the ore body, which is also seen to the right of Fig. 4. The laborers are removing the ore from pockets in this rock.

Fig. 6 shows developments in the western portion of Middle Hill, with the Bird Coleman furnaces in the background.

Proposed Chicago Tin Plate and Can Company.

The fact became known during the past week that a number of Western tin plate consumers, including packing and canning interests in Chicago, have been working on a plan to secure an independent supply of tin plates and cans. It is proposed to organize a company under the name of the Chicago Tin Plate & Can Company, with a capital of $2,500,000, for the purpose of putting up tin plate and can making factories, of which $1,000,000 is to be 7 per cent. cumulative preferred and $1,500,000 common. It had not been intended by the promoters of this scheme that it should become public at this time, but in some way a confidential circular fell into the hands of a representative of a daily paper. The projectors of the company are unwilling to disclose any more of their plans for publication. It is understood, however, that the scheme is backed by practical men who have been connected with both the manufacture of tin plate and cans. Enough is known of the project and its backers to cause considerable confidence to be placed in its becoming a reality.

The H. C. Frick Coke Company Absorb Smaller Coke Interests.—At a meeting of the Board of Directors of the constituent coke interests of the United States Steel Corporation, aside from the H. C. Frick Coke Company, action was taken by which these smaller coke interests have been absorbed by the H. C. Frick Coke Company, and the officials in the latter concern will occupy similar positions in the former. The concerns taken over by the H. C. Frick Coke Company are the Eureka Fuel Company, formerly owned by the Illinois Steel Company, and who have 2400 ovens completed and in course of erection, half of which are in the Connellsville region and half in the Klondike region; also the Continental Coke Company, formerly owned by the National Steel Company, and who have 1400 ovens, all in the Connells-

ville region, most of which are completed and running, only a few being uncompleted. The American Coke Company, formerly owned by the American Steel & Wire Company, and who had 1630 ovens, mostly completed, were also absorbed. In addition there were several smaller concerns taken over, and with the 5430 ovens acquired by the absorption of these concerns, together with nearly 12,000 of them, which they owned before, the H. C. Frick Coke Company now own and operate nearly 18,000 ovens, making this concern very much the largest coke producers in the world. Thomas Lynch is president and W. C. Magee general sales agent.

The Carnahan Stamping & Can Company.

At a recent meeting, held in Canton, Ohio, a deal was made by which the stamped and pieced tinware departments of the H. Wetter Mfg. Company, Memphis, Tenn., will be removed to Canton, enlarged, and opened under the name of the Carnahan Stamping & Can Company. The new company, composed of the members of the firms of the Berger Mfg. Company, Carnahan Tin Plate & Sheet Company, and the Stark Rolling Mill Company, all of Canton, and the H. Wetter Mfg. Company of Memphis, Tenn., organized with $300,000 capital stock. Ground has been laid off adjoining the plant of the Carnahan Tin Plate & Sheet Company and work will be started at once upon the erection of a three story brick factory building and warehouses. The new company will also take up the manufacture of tin cans and enameled ware in connection with their other products. The incorporators are J. E. Carnahan, William Blecker, Millard Taylor and Edward A. Langenbach of Canton, and A. G. Riley of Memphis, Tenn., president of the Wetter Mfg. Company. Officers elected were: President, J. E. Carnahan, president of the Carnahan Tin Plate & Sheet Company; vice-president, William Blecker, formerly of the Canton Roll & Machine Company, secretary and treasurer of the Canton Rolling Mill Company; general manager, Edward A. Langenbach, general manager of the Berger Mfg. Company, Stark Rolling Mill Company, and Carnahan Tin Plate & Sheet Company. The four companies, which are practically under the same management, will work in unison. Part of the product of the tin plate mill will be used in the stamping and can departments of the new company, and the black and galvanized sheets, to be manufactured by the Stark Rolling Mill Company, will be consumed by the Berger Mfg. Company and the enameled ware departments of the new company. The Carnahan Tin Plate & Sheet Company's plant, which was originally intended to be an eight-mill plant, will be increased to a ten and possibly twelve mill plant. The four plants, when fully equipped and in operation, will employ over 2000 men.

The Canning Machinery Company.—There have been incorporated at Albany a company for the manufacture of machinery with which to make tin cans. They are to be known as the Canning Machinery Company, and the incorporators are Postmaster Francis H. Wilson, Henry E. Hutchinson, president of the Brooklyn Bank, and William H. Hibbard, a manufacturer at 85 Washington street, all of Brooklyn. The company are capitalized at $200,000, and besides the three men named there will be interested financially three others, whose names, however, could not be learned. The plant will be established in Brooklyn and will probably give employment to a large number of men. At present the preliminary work will be done in the establishment of W. H. Hibbard, who is a machinist of large experience and who controls a number of inventions and patents which will be used in the new enterprise. While the purpose of the company is given as the making of machinery from which tin cans of all classes can be manufactured, it is the ultimate intention to make the company a general machine and tool making concern. The exact location of the new company has not as yet been determined upon, but it will be in a section of Brooklyn convenient to points of shipment.

Open Hearth Steel Production in Great Britain.

The production of open hearth steel in the United Kingdom in recent years has, according to the British Iron Trade Association, been as follows, in gross tons:

			1900.		Total,
District.	1898.	1899.	Acid.	Basic.	1900.
Northeast coast.	996,112	1,039,764	978,242	25,009	1,003,251
Scotland	948,120	940,235	960,581	2,764	963,345
South and North Wales	320,500	459,770	519,282	31,286	550,568
Sheffield and Leeds	211,371	230,115	210,154	47,080	257,234
Lancashire and Cumberland..	152,001	167,060	117,554	39,294	156,848
Staffordshire, Cheshire, &c.	178,496	193,307	76,753	148,051	224,804
	2,806,600	3,030,251	2,862,566	293,484	3,156,050

For the year 1900 the production of acid and basic steel has been given separately.

For the last few years the steel production of Great Britain has been as follows, in gross tons:

Year.	Open hearth.	Bessemer.	Total.
1896.....	2,317,555	1,815,842	4,133,397
1897.....	2,601,806	1,884,155	4,485,961
1898.....	2,806,600	1,759,386	4,565,986
1899.....	3,030,251	1,825,074	4,855,325
1900.....	3,156,050	1,745,004	4,901,054

The United States for the first time surpassed the product of open hearth steel in Great Britain, our make having been 3,402,552 gross tons, as compared with 2,947,316 tons in 1899. Our production of Bessemer steel was 6,684,770 tons in 1900 and 7,586,354 tons in 1899, so that our total steel product was 10,533,670 tons in 1899 and 10,087,322 tons in 1900, or over double the British product.

The Stevenson Mine.

The Stevenson is the latest of the open pit mines of the Mesaba. It was discovered some years ago, but was not opened until a lease was taken by Corrigan, McKinney & Co. about a year ago. Last summer a shaft was sunk and 56,000 tons were mined and shipped during the year. A stock pile of 60,000 tons more was raised and the shaft was then abandoned. This stock pile has now been sent down and the future shipments will be from the open pit. A large amount of ore has been sold for delivery this year and additional contracts for 1901 are said to be pending. The mine is well located for stripping and the ore is of a good quality and in great quantity.

The property belongs in fee to the J. J. Hill interest, which insures the transportation of its ore over the Eastern Minnesota road to Lake Superior. There is a low royalty on the mine, which reduces as the amount to be shipped annually is increased, till with shipments of more than 500,000 tons the rate is 12½ cents a ton.

The mine is in sections seven and eight, T 57 R 21, and a year ago this land was a forest. Then a stripping contract was given the Drake & Stratton Company, and since that time there have been two and at some times three steam shovels at work day and night. These shovels worked continuously all winter, and now have removed about 350,000 yards of earth and surface material. There is a hole varying from 28 to 42 feet in depth, about ½ mile long, and not far from 150 feet wide on top. A narrow and long ore surface has been exposed, and a large shovel has commenced a cut into the ore there. It is now in a few feet and is working against a low bank that is gradually deepening as the shovel works westerly in the center of the cut. There is no great width of ore exposed, and an additional cut will be undertaken in the surface at once in order that large mining operations, such as the owners contemplate, may be successfully carried on.

Information Wanted.—A correspondent desires to know the address of a manufacturer of a machine for polishing zinc. The special purpose for which it is to be used is for polishing zinc linings of refrigerators after the refrigerator has been completed.

Machinery at the Pan-American Exposition.—I.

Prentice Bros. Company.

At the Pan-American Exposition the Prentice Bros. Company of Worcester, Mass., have an interesting exhibit, comprising several of their standard tools of latest design.

Electrically Driven Swing Drilling Machines.

Their electrically driven 20-inch swing drilling machine is shown in Fig. 1. The motor is of 3 horse-power, constant speed. It is placed on the base and connected to the cone shaft through gearing. The machine has a combined wheel and lever feed, and the head is stationary. The spindle is counterbalanced and has a quick return motion. The table has vertical adjustment on the column by a screw and can be swung to one side to allow work to be placed on the base plate. The distance from the post to the center of the table is 10 inches, and the greatest distance from the spindle to the base plate is 44 inches, and from the spindle to the table 24 inches. The spindle is 1 7-16 inches in diameter, and it has a traverse of 8 inches. The floor space occupied by the machine is 41 x 29 inches, and the total hight 6 feet 2 inches.

The second drilling machine illustrated is made in sizes to swing 22, 24, 26 and 28 inches, and is driven by a 1 or 2 horse-power constant speed motor. The motor is connected to the cone shaft by two trains of gears running in opposite directions. On the shaft are two friction clutches, controlled by a lever, and by means of which the drill may be instantly stopped, started or reversed, and at an accelerated speed independent of the motor. As the gears are heavy, they serve as a balance wheel to the motor and prevent overload. There are eight changes of spindle speed, by cone belt and back gears. This machine has a vertically adjustable head, and both head and spindle are counterbalanced. The feed is either by hand or power. There is an improved quick return and stop motion, permitting the spindle to be quickly returned or approached while power feeding. It also permits the point of the drill to be brought to the work and the power feed thrown in by the same lever, while the machine is in operation. The back gears are controlled by a lever within easy reach of the operator. In the 22-inch machine the distance from the post to the center of the table is 11¼ inches. The maximum distance from the spindle to the base is 43½ inches and the minimum 17 inches. The greatest distance from the spindle to the table is 31 inches, and the traverse of the spindle is 8½ inches. The diameter of the spindle is 1½ inches and of the table 20½ inches.

Radial Drill.

The radial drilling machine, Fig. 3, is driven by a 3 horse-power constant speed motor connected to the cone in the same way as in the drill just described. The machine is gear driven from the top shaft. The back gears are placed on the head to relieve the shafts and gears of strain. The arm swings easily on ball bearings, may be clamped in any position, and has vertical adjustment by power. The movement of the head on the arm is by hand wheel, rack and spiral pinion, and the position of the head cannot be changed by accident. The spindle is back geared and counterbalanced, and has an improved quick return and stop motion. The spindle travels 18 inches and the saddle on the column 46 inches. The least distance of the spindle from the column is 26 inches, and to the trunnion bearing 15½ inches. The traverse of the head on a 6-foot arm is 42 inches and on a 7-foot arm 54 inches. The 6-foot arm drills to the center of a 130-inch circle and the 7-foot arm to the center of a 154-inch circle. The distance of the spindle to the base plate is, maximum, 72 inches; minimum, 14 inches. The table is 23 x 27 inches and the available space on the base plate is 72 x 42 inches.

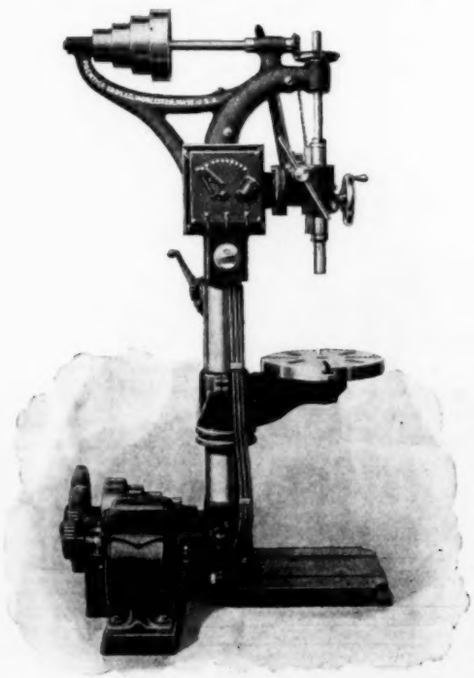

Fig. 1.

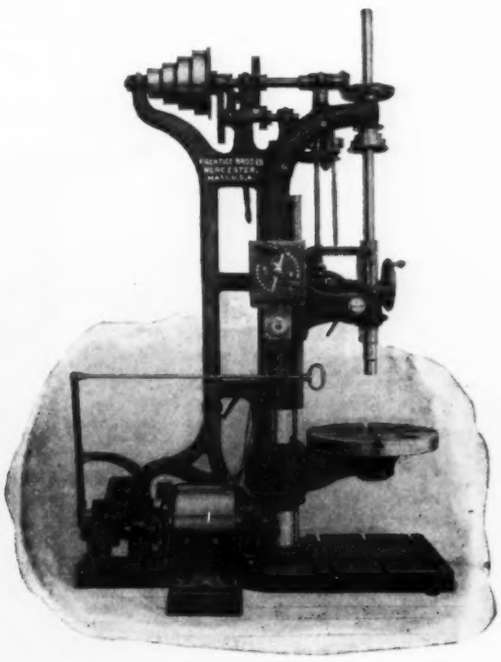

Fig. 2.

Electrically Driven Swing Drilling Machines.

MACHINERY AT THE PAN-AMERICAN EXPOSITION.

Electrically Driven Lathe.

The 16-inch engine lathe shown in the last engraving is operated by a 1 horse-power motor attached to the bed. Power is transmitted to the spindle through gearing. The changes of spindle speed are mechanical, by levers projecting from the head under the geared hood. The lathe is started, stopped, or the motion reversed, and at an increased speed, entirely independent of the motor, by a lever attached to the apron. The lathe has power cross feed. The spindle has a 1¼-inch hole and the end thrust is sustained by a step which is independent of the bearings. There is a belt and gear feed and the feed

belt is provided with a tightener. The front bearing, of bronze, is 5½ x 2⅝ inches and the back bearing 3½ x 2 3-16 inches. The lathe swings over the ways 18 inches, over the rest 10 inches, and the distance between centers is 29 inches on a 6-foot bed. The change gears cut from 2 to 36 threads.

Iron and Steel at the Glasgow Exhibition.

I propose this week to give a few notes on some of the more prominent of the exhibits at the Glasgow International Exhibition of interest to readers of *The Iron Age*.

The Steel Company of Scotland, Limited, Glasgow, the pioneers of the Scotch steel trade, make a very complete display of their productions. The frame work of their exhibit takes the form of a trophy built up of rolled sections representative of the material manufactured at their Hallside and Blochairn works. The side top girders are supported on six massive columns built up of rails, angle, tee, channel and "Zed" bars. Along either side are two channels studded with sections of bars of every description rolled by the company. The production of steel plates for ship, boiler and bridge building is an important branch of this company's trade, and one end of the trophy is formed by a large boiler plate 1½ inches thick and 124 inches wide. Very fine examples are also shown of a flanged boiler front and two flanged marine boiler combustion chamber plates. Prominent among the articles exhibited are specimens of the company's special "Yolla" steel as used in the construction of the yachts "Shamrock I" and "Shamrock II."

Castings and forgings also form a very large part of this company's manufactures, and models are shown illustrative of some of the gigantic and difficult castings successfully produced, such as the cast steel stern post, brackets, &c., weighing 123 tons, made for steamship "Campania," and a similar casting made for her sister ship "Lucania"; the cast steel bed plate and columns for the engines of the "Teutonic" and "Majestic," and a cast steel stern post and brackets, weighing 80 tons, for the Transatlantique Company's steamship "Lorraine," also a huge cast steel stern post for an Italian battle ship. While one end of the trophy is formed by a large boiler plate, the other end is supported by a full size model of a cast steel engine column, weighing 6 tons, as supplied to the steamship "City of New York." The exhibits of castings include a large cylinder and cover for a battle ship, a locomotive driving wheel cut, bent and tested in various ways, showing the great tenacity of the material. Heavy cast steel rolls and a great variety of general castings, including everything that is cast for locomotive work, and a steel cradle for a 6-inch quick firing gun, as supplied to the War Office, are also shown. Prominent among the forgings is a very fine steel connecting rod. Among the exhibits are specimens of the standard tires and axles supplied to various railways, including tires for 8-feet driving wheels of the Great Western Company's locomotives. A most interesting feature of this exhibit is the collection of examples of twisted and bent steel. When it is remembered that the steel has in every instance been bent or twisted cold, the ductility displayed seems little short of marvelous, and those conversant with such matters cannot fail to admire the many proofs of the excellent quality of the steel produced by the Steel Company of Scotland, Limited.

Two enormous 70-foot plates arched and curved, the one under the other, are exhibited by David Colville & Sons of the Dalzell Steel and Iron Works, Motherwell.

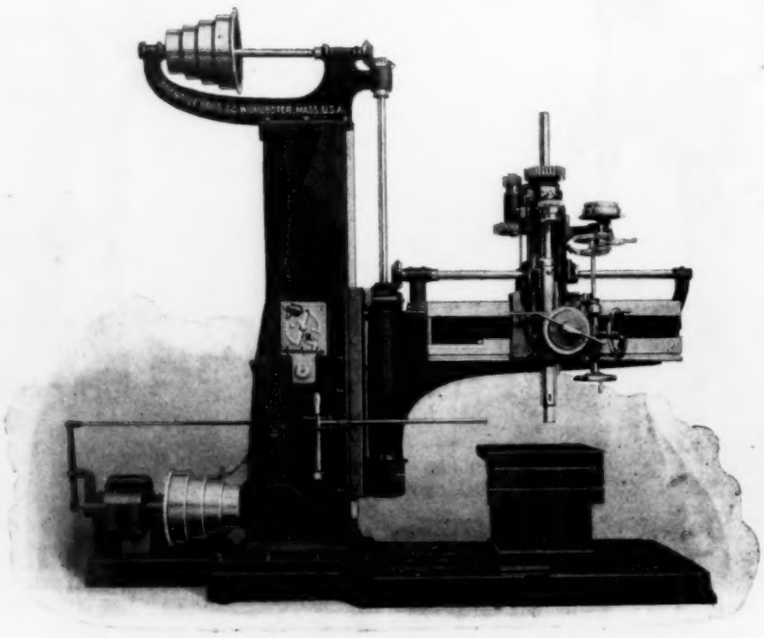

Fig. 3.—Electrically Driven Radial Drill.

MACHINERY AT THE PAN-AMERICAN EXPOSITION.

They at once attract the eye as you enter the Machinery Hall from the Grand avenue. There are two of those mammoth arches, forming a sort of trophy, under which is grouped a large collection of castings, ingots, slabs, bars, flats, rounds and angles illustrating the quality of the steel under various tests, hot and cold. It is impossible to deal here with all the items, but we note a plate 72 feet 6 inches long by 74 inches wide by ⅞ inch thick to Lloyd's tests; a plate 65 feet long by 74 inches wide and 15-16 inch thick, also to Lloyd's tests, forming the arches; a boiler shell plate, 25 feet long by 138 inches wide by 1½ inches thick, to Lloyd's and Board of Trade tests; a boiler end plate, 11 feet 7 inches diameter by 1 3-16 inches thick, to Lloyd's and Board of Trade tests; a flanged boiler end plate for 15 feet diameter boiler; cross connection pieces for Babcock-Wilcox water tube boiler; a cogged slab 7 feet long by 54 inches wide by 13 inches thick, weighing 7 tons 11 hundredweight; a cogged bloom 21 x 21 inches; a cast steel plate mill roll, 34 inches diameter by 12 feet long, weighing 18 tons; a cast steel bar mill roughing roll for 32-inch mill, and two Dalzell cast iron mill pinions, one for 36 inches and one for 18-inch mill. The high quality of the steel is demonstrated in innumerable examples of twists, bends, elongations and holing. Here also may be seen an interesting example of fractured steel in the shape of

a plate broken by a Boer shell in the South African War. This plate was on the armored train in connection with which Winston Churchill was taken prisoner.

Charles Cammell & Co., Limited, of the Cyclops Works, Sheffield, have one of the most effective displays of steel work in the Machinery Hall. Everything is beautifully polished, including a gun core for a 65-ton gun, about 35 feet in length, and weighing about 20 tons. This splendid specimen is placed along the frontage of the stand, and reflectors fixed at each end reveal the whole of the interior of the tube. In the center of the platform is a huge Cammell "Krupped" armor plate 11.66 inches thick, which has withstood testing by 12-inch B. L. gun firing 750-pound armor penetrating projectiles. The uninjured parts of the plate are painted, leaving the portions struck by the projectiles in their normal color so that the exact extent of the injury stands out distinctly. On the top of this plate is a massive gun trunnion, in the center of which is an artistic arrangement of files and fine steel bars. Above are the Royal arms, and crimson drapings complete the show. The platform on which the trunnion rests is studded with polished projectiles. On either side of the stand are full sized models of casements and inner shields for protection of 6-inch quick firing guns. On the floor of the stand are double throw and three-throw hollow forged crank shafts and a fine thrust shaft, all perfectly finished and polished. Other specimens of Messrs. Cammell's manufactures are railway buffers, springs of various kinds, including powerful springs for gun carriages. A large collection of projectiles is effectively arranged, including a 12-inch projectile and a 9.2-inch lyddite shell. Bullet proof shields 3-16 inch thick for protecting naval Maxim-Nordenfeldt guns and for defending the axletree seats of field guns are shown. A torpedo air tube, cast steel magnets, stamp heads and cams for ore crushing batteries are among many other exhibits. The difficult task of making an artistic show with such heavy material is successfully carried out. Among specialties shown are water feed collectors bored from the solid locomotive cranks and shafting for a torpedo boat destroyer.

Noteworthy among the displays of steel manufactures is that of the Lanarkshire Steel Company, whose works are at Motherwell, Lanarkshire. This firm roll ingots up to 50 tons and here they show splendid specimens ranging from 3 to 8 tons, sheared hot to 18 inches square, also 5 feet wide by 14 inches. There are various sections of bars and Z angles twisted cold in the lathe; three 1½-inch round bars bent into a rope; pieces of 8 and 10 inch bulb angle with one side bent back and then folded over. Some 4-inch round and 3½-inch squares are shown bent quite close and some 5 x 5⅛ inch flats with holes drilled across them, bent at right angles across the holes. Remarkable testimony to the quality of this steel is borne by various sections and thicknesses of angles with holes punched in them at less than ⅛ inch from the edge. Here, too is a 1 inch square broken at 36 tons with 35 elongation in 2 inches, and folded over closely; also 2½ and 2¾ inch rounds broken at 30 tons per square inch, and 4 x ½ inch flats drawn to 3 x 5-16 inch. Some ordinary "pitch" and "figure of eight" knots are twisted in ½ up to 1¾ round bars, and 2½ x ¾ inch flats are shown with ½-inch holes driven then drifted out to 1⅞ inches. This firm have recently started a new mill at which they roll girders up to 24 tons and rounds to 10 inches diameter.

The Darlington Forge Company, Limited, Darlington, have two exhibits, one in the Machinery Hall and the other outside in the grounds. Among the interesting items shown are the cast steel stern frame and shaft brackets of the twin screw transatlantic liner "Oceanic," built by Harland & Wolff, Limited, Belfast, for the White Star Line. This weighs 97 tons. Also the cast steel stern frame and shaft brackets of the twin screw transatlantic liner "La Savoie," built by La Société Anonyme des Ateliers & Chantiers de Penhoet, Saint Nazaire. The weight of this is 79¾ tons. Next there is a forged steel solid crank shaft, as made for His Majesty's first-class battle ships "Cornwallis" and "Albermarle," weighing 17¼ tons; and another forged steel built crank shaft 20 inches diameter, weighing 37¾ tons. There also is a cast steel rudder frame, as made for His Majesty's battle ship "Albermarle," weighing 15 tons; a cast steel single plate rudder with forged steel stock, as made for Harland & Wolff, Limited, Belfast, weighing 12 tons, and forged iron anchor davits, as made for His Majesty's first-class battle ships "Duncan" and "Cornwallis," weighing 7 tons each.

A highly interesting item is the cast steel stern frame taken from the steamship "Heighington," which went aground, and was fractured, and which has been welded with a view of proving that cast steel frames can be repaired by welding, and of ascertaining the effect of welding upon frames. After being subjected to a number of cold bend tests at the weld, in the presence of Lloyd's surveyor, it was found that there was no disturbance at the weld, nor any sign of flaw in the frame. A few steel castings, taken promiscuously, show the ordinary make of the molder, such as steam cylinder and steam chest covers, pistons, locomotive wheel centers, one of the latter having been subjected to the severe test of being dropped 12 times from a hight of 50 feet onto a solid steel bed weighing 10 tons. The Machinery Hall exhibit of this company consists of a glass case containing electro plated models of about 70 specimens of iron and steel forgings and steel castings for marine, loco-

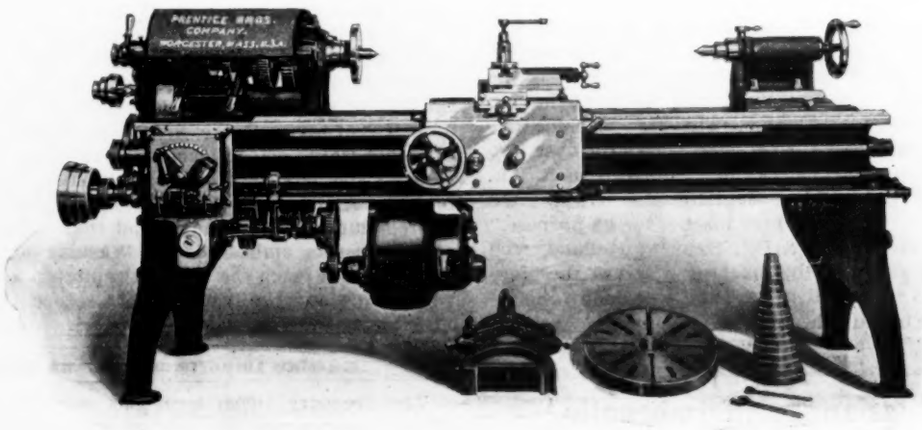

Fig. 4.—Electrically Driven Engine Lathe.

MACHINERY AT THE PAN-AMERICAN EXPOSITION.

motive and stationary engines, hulls of ships, hydraulic machinery, rolling mills, colliery work and general engineering.

In this section of the exhibition an interesting stand is that of Victor Coates & Co., Limited, of Belfast, who show a patent boiler flue drilling machine, which has been specially designed and patented for drilling the flue joints of Lancashire and Cornish boilers in a vertical position, so as to insure a perfectly true hole through the three thicknesses of plate—viz., the two flanges and calking ring, which, when riveted together, form what is commonly known as the "Adamson joint." The chief feature of this machine is that when two flue rings and the calking ring are fixed together for drilling, instead of being held at one end, as in an ordinary machine, they are caught in the center by the turned flanges, the two outer ends being allowed to revolve free; and as this is the joint on which the drills operate on being revolved by the pitch gear, the rivet holes must naturally be truer than by any other arrangement. The four drills are arranged to work simultaneously and are carried by the two beams, which can be traveled in and out for drilling the various diameters of flues, and also for placing and removing the rings in the machine. The drills are specially designed to run at a high speed, being fitted with water service, and are so compact that the shortest flue ring can be drilled. The pitching of the holes is automatic, and can be arranged to suit the different number of holes required according to the diameter of the flue. The machine here exhibited is the fourth one made; the first three trial machines having given the greatest satisfaction. The first machine has been working in Victor Coates' own works for over two years; the second machine has been supplied to A. Anderton & Co., Limited, Accrington, who write: "We think it the best machine on the market for its purpose." The third to Gebr. Stork & Co., Hengelo, Holland, who "are very content with the machine." It has therefore caught on, and more will be heard of it. Meanwhile attention is directed to it here as something of a novelty.

B. T.

The Russian Tariff Imbroglio.

WASHINGTON, D. C., July 16, 1901.—There has been an important development during the past week in the controversy between the United States and Russia which resulted some months ago in the imposition of additional duties on certain manufactures of iron and steel, and more recently in an increase in the rates upon American bicycles, resin, &c. The Russian Government, through the usual diplomatic channels, has proposed that the Secretary of the Treasury shall rescind the order levying countervailing duties on Russian sugar entering the United States, which was issued on the ground that Russia pays an export bounty. In exchange for this concession Russia agrees to cancel the two decreees increasing the duties on the American manufactures referred to.

Secretary Gage has given the Russian proposition very careful consideration, but has been obliged to reply that it is impossible to adopt the suggestion for two reasons: First, because the countervailing duty on Russian sugar was levied under the provisions of the Dingley act, which are mandatory and which leaves the Secretary no discretion; and second, because the importers of Russian sugar upon whose importations the countervailing duty was levied appealed to the courts and the matter is now in process of judicial determination.

In proposing the withdrawal of the Treasury Department's order concerning Russian sugar the Russian Government ignores absolutely the action of the United States in levying duty on Russian petroleum, and it is an extraordinary fact that in the communication of the Russian Minister of Finance offering to cancel the decrees heretofore issued the positive statement is made that the assessment of additional duties on American bicycles and resin was not based upon the action of the United States Government with reference to Russian petroleum. Against this remarkable statement of the Minister of Finance the State Department has in its files the autograph note of the Russian Ambassador in Washington, Count Cassini, which is in part as follows:

"The Federal Government having, by a circular dated March 9, 1901, applied article 626 of the American tariff to Russian petroleum the Imperial Government has just informed me that the Minister of Finance of Russia has taken the requisite steps for the application of the advanced rates of duty to the following American products entered into Russia: 1. White resin or colophon, galipot, brewers' pitch, &c. 2. Bicycles."

The officials of both Treasury and State Department are hopeful that the proposition of the Russian Government, though unacceptable at the present time, is but the forerunner of negotiations that will speedily result in the settlement of the entire controversy. The action of the Russian Minister of Finance in ignoring the petroleum order is given an alternative construction by experienced officials, either that an examination of the United States tariff laws and rulings concerning Russian petroleum during the past seven years has convinced the minister that there is no foundation for his contention that a discrimination against Russian commerce has been made, or that the minister is prepared to concede the force of Secretary Gage's contention that the proposed additional duty on bicycles, &c., constitutes a direct violation of the "most favored nation" clause of the Russo-American treaty of commerce and navigation negotiated many years ago. If the first view is correct, it is argued that the case against Russian sugar was quite as strong as that against petroleum; while if the other construction is the proper one, then it is urged that the levying of duties on machinery, tools and other manufactures of iron and steel is quite as flagrant a violation of treaty rights as the increase in rates on bicycles and resin. Cable advices from St. Petersburg are to the effect that Ambassador Tower is making good progress in straightening out this tangle and that upon the arrival of the Russian ambassador at Washington, Count Cassini, who will reach the Russian capital in a few days, a very strong effort will be made to secure a satisfactory adjustment of the matter.

Russian Imports of Iron and Steel.

The Treasury Department has secured through the official Russian customs returns some interesting data showing the total amount of importations of the articles affected by the recent tariff decrees as compared with the amount of the shipments of these goods to Russia from the United States. During the months of January and February, 1900, the total imports into Russia of articles classified under the schedules affected by the Russian decree concerning manufactures of iron and steel amounted to 11,131,000 rubles (ruble equals 51.5 cents) divided as follows: Cast iron wares, 392,000 rubles; steel and iron manufacture, 1,237,000 rubles; tools for use of artisans, 667,000 rubles; machinery of iron and steel, 8,835,000 rubles. During the corresponding months of January and February, 1901, the imports fell off 38 per cent., owing to the depressed state of Russian industry, the total amounting to but 6,835,000 rubles, divided as follows: Cast iron wares, 255,000 rubles; steel and iron manufactures, 853,000 rubles; tools for use of artisans, 610,000 rubles; iron and steel machinery, 5,117,000 rubles.

The difference in classification makes it difficult to calculate the percentage of these imports into Russia furnished by the United States, but the best figures available indicate that about one-tenth of the total of these lines of goods was supplied by this country during the year 1900.

The total imports into Russia of bicycles during the past three years were as follows: 1898, 1,269,000 rubles; 1899, 1,579,000 rubles; 1900, 1,193,000 rubles. Exact figures can be given showing the share of the United States in this trade, and it is found that our exports of bicycles to Russia in 1898 amounted to $36,508; in 1899, to $140,993, and in 1900 to $74,135. From these figures it will be seen the United States exports of bicycles to Russia have averaged during the past three years about 15 per cent. of Russia's total imports. Our share of Russia's imports of resin has been considerably larger, averaging about 20 per cent. during the past three years.

W. L. C.

The Baker Stock Indicator for Blast Furnaces.

With the advent of mechanical filling devices for blast furnaces comes the necessity of a means of indicating the hight of stock in the furnace so that the man operating the hoist may know how nearly full the furnace is at any time. The instrument here illustrated is in use at the South Works of the Illinois Steel Company and was invented by David Baker, superintendent of the blast furnaces at these works.

Fig. 1 shows a section of the furnace where the indicator was first used. The indicator rod 4 consists of a round bar about 1 inch in diameter and about 30 feet long which extends through a hole in the top and rests on the stock. To the other end is attached a wire rope

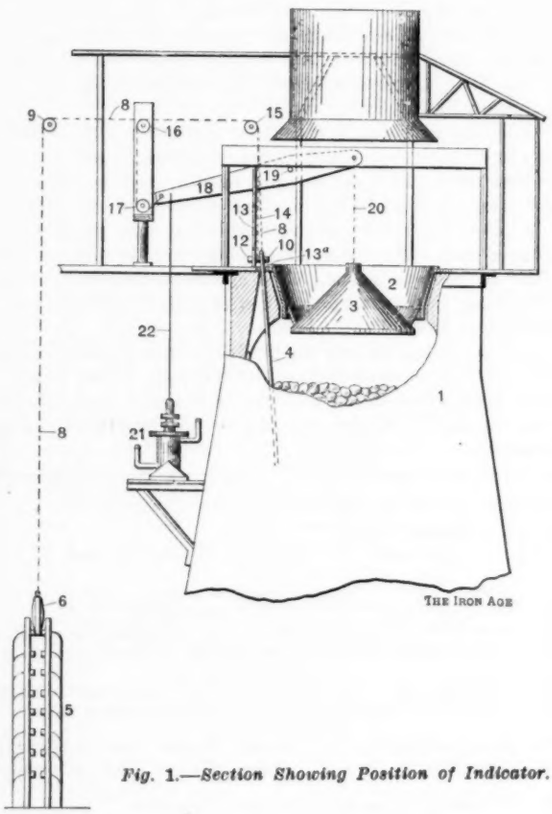

Fig. 1.—Section Showing Position of Indicator.

leading over the pulleys 9 and 15 to the operating house of the hoist. In this engraving the indicator is shown in connection with an electrical device, 5, which is used only when it is desirable to have a recording device in the office of the superintendent, but ordinarily this is not used, and the rope 8 terminates in a weight, 6, which travels before a board on which are marked the number of feet from the "stock line" down in the furnace it is desired to have the indication of. There is another rope, 14, which is attached to the gripping weight 10 and passes over one pulley at 15, there being two side by side, the other pulley for the rope 8 being attached to the indicator rod. From the pulley 15 the rope passes around pulleys 16 and 17 and is attached to the end of the bell operating lever. The gripping weight 10, Fig. 2, is guided by the rod 13, which serves merely to prevent the grip from twisting about the indicator rod.

The operation of the rod is as follows: When no stock is being put in the furnace the end of the indicator rod 4 is on the stock and the weight 6 indicates on the scale the hight of the stock in the furnace and as the stock settles the weight travels up the scale. When the bell is lowered the end of the bell lever moves up, thus causing the gripping weight 10 to travel up the indicator rod 4 with it. The total lift is about 4 feet from the stock, which is the same as the travel of the outer end of the bell beam. This lifting of the rod permits it to swing easily so that the incoming charge does not bend it, as it would if the rod remained on the stock at this time. As the bell is closed the rod is lowered to rest on the stock. The sliding weight continues to travel until it comes to rest on a tripper, 13*a*, which in this illustration is the "tunnel head" ring, but when the test holes do not come near enough to utilize this casting a small block may be placed at this point to act as a trip to the weight. This tripper keeps the grip weight horizontal, and in this position the indicator rod is free to travel down during the intervals of charging.

This arrangement gives automatically a record of the position of the stock by the weight 6, and the withdrawal of the rod from contact with the stock during charging prevents the indicator rod from being bent. With this device no person is necessary on top of a modern furnace. The oiling can be done once in 12 hours by the hoister. Such an arrangement, aside from being a convenience, is a necessity, for as the gas leaking from a closed top furnace is not ignited it is much more deadly, and it is unsafe for a man to remain on top exposed to this gas any length of time. It then becomes necessary to have a second man to watch the first one, but with the stock indicator a gauger is unnecessary on top.

Coal Lands Sold.—J. H. Hillman & Son, Empire Building, Pittsburgh, dealers in pig iron, steel and coke,

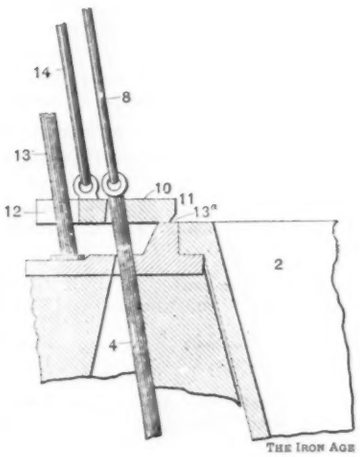

Fig. 2.—Enlarged Section of Gripping Device.

THE BAKER STOCK INDICATOR FOR BLAST FURNACES.

Connellsville coking coal lands and manufacturing plants, last week transferred to Joseph White of Irwin, Pa., and Hoggsett Bros. of Uniontown, Pa., 5000 acres of valuable coal lands, in Indiana County, Pa. The price paid was $625,000, or $125 an acre. The land is mostly in Indiana County, but a part of it lies just across the Armstrong County line. The majority of acreage is land formerly owned by the estate of Thomas A. Scott, who was many years ago president of the Pennsylvania Railroad. The coal is Pittsburgh gas coal and is far above the water line. The tract has been sought after for years by many of the most extensive coal operators of Western Pennsylvania, and is said by experts to be one of the finest coal fields in the State.

Puddled Bars in Great Britain.—According to the British Iron Trade Association, whose report has just been issued for 1900, the production of puddled bar was 1,115,699 gross tons in 1898, 1,201,606 tons in 1899 and 1,162,765 tons in 1900. This compares with 2,841,534 gross tons in 1882. In 1900 South Staffordshire and Worcestershire contributed 265,181 tons, Scotland, 206,216 tons; Cleveland, 198,131 tons; Lancashire, 149,022 tons; Yorkshire, 137,134 tons, and North Staffordshire, 113,860 tons.

The National Standardizing Bureau.

WASHINGTON, D. C., July 16, 1901.—The Secretary of the Treasury, upon the recommendation of Director Stratton of the new National Standardizing Bureau, has appointed the following visiting committee to supervise the work of that instituion:

Ira Remsen, professor of chemisry and president of Johns Hopkins University.

Henry S. Pritchett, professor of physics, ex-superintendent of the United States Coast and Geodetic Survey and president of the Massachusetts Institute of Technology.

Edward L. Nichols, professor of physics and electrical engineer of Cornell University.

Elihu Thompson, professor of physics and electrical engineer of the General Electric Company.

Albert Ladd Colby, professor of chemistry, metallurgical engineer of the Bethlehem Iron Company and secretary of the American Steel Manufacturers' Association.

The members of the Board of Visitors have signified their acceptance of their appointments and will devote considerable time to the preparatory work of installing the new bureau. Both Secretary Gage and Director Stratton feel that the eminence of the members of the board in their several fields will be a sufficient guarantee to the public at large that the bureau will be conducted on a high scientific plane and that at the same time its work will be directed along practical lines with a view to making it as useful as possible to American manufacturers. The members of the board were selected not only because of their standing in the specialties to which they have devoted themselves, but because of their general scientific attainments. Both Professor Thompson and Professor Nichols are electrical engineers, but they are also expert physicists. Mr. Colby, though a metallurgical engineer, is a general chemist of high reputation, and while Professor Remsen is best known for his research work in the field of chemistry he is also thoroughly familiar with other branches of pure and applied science.

One of the first duties of the board will be to select a site for the new bureau, and they will convene for this purpose in a few days. The general plans of the buildings will then be prepared and submitted to the board for approval. While this work is in progress Director Stratton will make a tour of Europe, which he has had in contemplation for several months, with a view to equipping the new bureau with the very latest apparatus for standardizing purposes.

The work of selecting a working staff is progressing satisfactorily, both the Secretary of the Treasury and the Director preferring to proceed with deliberation in order that the best available men may be chosen. Prof. Edward B. Rosa, professor of physics at Wesleyan University, has been appointed chief physicist of the bureau. Professor Rosa is a graduate of Johns Hopkins and has already done considerable research work in the field to which the new bureau will be devoted. The chief chemist has not been appointed, but a thoroughly competent expert is understood to have been selected for the place. The secretary of the new bureau, who will have charge of its business affairs and the current clerical routine, will be appointed through the Civil Service Commission, as will also the laboratory assistants and the clerical staff.

W. L. C.

By-Product Coke Ovens in the United States.

BY DR. F. SCHNIEWIND.

Another of the large steel works in this country—namely, the Maryland Steel Company, at Sparrow's Point, Md.—has decided to equip its plant with modern coke ovens instead of producing coke by the antiquated and wasteful beehive process. The list of coke ovens erected by the United Coke & Gas Company in this country and Canada, as given below, must be convincing proof that the American blast furnace men have abandoned their prejudice against by-product coke. By exhaustive investigations and careful observations in the actual blast furnace practice the following facts have been demonstrated:

1. If manufactured from the same coal, by-product coke is at least equal and in many instances better than beehive coke. It is denser and harder, and, consequently, better adapted to the modern furnace of larger size.

2. The retort coke oven produces a high grade blast furnace coke from coals which could not be successfully coked in beehive ovens. This opens up new coal fields for coking purposes and makes the blast furnace independent of Connellsville coke.

3. The value of the by-products incidentally recovered greatly reduces the cost of the coke. This is especially true when the coke plant is situated near a large city, where the surplus gas can be sold for illuminating purposes.

List of By-Product Coke Ovens Erected or Building by the United States Coke & Gas Company.

Name of owner.	Location of plant.	No. of ovens.	Character of coke produced.	Use of gas.	Kind of coal used.
Cambria Steel Company	Johnstown, Pa.				
First installment		60	Blast furnace.	Fuel.	Washed.
Second installment		100	Blast furnace.	Fuel.	Conemaugh.
Pittsburgh Gas & Coke Company	Glassport, Pa.	120	Blast furn. and domestic.	Fuel.	Youghiogheny run of mine.
New England Gas & Coke Company	Everett, Mass.	400	Domestic and locomotive.	Illuminating.	Cape Breton washed slack.
Dominion Iron & Steel Company	Sydney, C. B.	400	Blast furnace.	Fuel.	Cape Breton washed slack.
Hamilton Otto Coke Company	Hamilton, Ohio.	50	Foundry and domestic.	Illuminating.	Kanawha run of mine.
Lackawanna Iron & Steel Company	Lebanon, Pa.	232	Blast furnace.	Fuel.	Washed Vintondale slack.
Lackawanna Iron & Steel Company	Buffalo, N. Y.	564	Blast furnace.	Fuel.	Washed Vintondale slack.
South Jersey Gas, Electric & Traction Company	Camden, N. J.	100	Foundry and domestic.	Illuminating.	Undecided.
Maryland Steel Company	Sparrow's P'nt, Md.	200	Blast furnace.	Illuminating and fuel.	Undecided.
Total number of ovens		2,226			

The plant to be erected for the Maryland Steel Company by the United Coke & Gas Company will be located at Sparrow's Point, Md. The erection will commence immediately, and it is expected to complete the works early next year.

The ovens will be of an improved type, which has been protected by United States patent No. 673,928. As this coke oven will be of general interest, we will give a short description of the same. A battery consists of 50 coke ovens. The retorts 1 are filled with coal through a number of charging holes, 2. The number and spacing of these charging holes is designed to give as uniform a distribution of the coal charge in the retort as possible, in order to reduce the labor of leveling the coal charge to a minimum. This leveling is done from both sides of the retort through the openings 3, Fig. 2, in the coke oven doors 4. When the oven is around—*i. e.*, when all the volatile matter has been driven off—a movable pushing machine is brought opposite the retort and the entire coke charge forced out onto either a stationary or movable platform. This apparatus, as well as the charging apparatus, have been described in previous articles, and do not need to be discussed here.

One of the principal differences between this coke oven and the other types is the placing of the entire oven structure upon steel columns, which makes the oven accessible from every point below. This steel substructure consists of a number of vertical columns, 5, upon which

rest heavy plate girders, 6. These again support a number of small I-beams, 7, which carry the oven proper. The fact that the oven is accessible from below permits the supply of gas required for the heating of the ovens by a number of accessible burners arranged underneath. The gas supply can be regulated in such manner that each part of the oven obtains the required amount of heat in order to maintain a uniform temperature throughout the entire retort. This is a great advantage over the Otto-Hoffmann ovens. Another advantage is the certainty that no movement in the foundations or lower part of the brick work will affect the oven walls. The tightness of the oven walls is, of course, the keynote to the success of the by-product coke ovens, as the yield and the quality of the by-products depend upon the same.

The heating of the oven is done in the following manner, based upon the Siemens regenerative principles: For a part of the time, say, for instance, one-half hour, the gas is supplied to the ovens through pipe 8, Fig. 2. The amount required for each part of the oven enters through the vertical tuyeres 10, each of which can be regulated by a separate cock, 11. The gas then enters the combustion chambers underneath the side walls of the ovens, 12, where it is burned by highly superheated air coming from the regenerators, to be described later on, and entering into the combustion chamber through small portholes, 13, Fig. 2. There are in all eight combustion chambers, of which only four are shown in section A B of Fig. 2. The flames then ascend through vertical flues, 14, Fig. 1, to the upper horizontal flue 15, in which they travel over to the other half of the retort and descend again through a corresponding number of vertical flues arranged between the retorts, and ultimately fall into the regenerator.

In order to follow the air supply through the retort we will now assume that the oven has been reversed—that is, that the gas for the combustion is brought to the oven through the main fuel gas pipe 9, to the right in Fig. 2, and the flames travel in the opposite direction. The tuyeres, which admitted the gas to the several parts of the ovens, are not shown in section C D, Fig. 2, but are, of course, the same as described above for section A B. The air supply is as follows: Cold air is blown by means of a fan into the bottom of the regenerator through flue 16, Fig. 2. The air then rises through checker work, 17, and arrives in the upper regenerative chamber 18 with a temperature of about 1850 degrees F. This regenerator runs underneath the ovens along the entire battery. Each oven receives the necessary amount of air through the vertical flues 19, Fig. 2. The air supply can be regulated by means of an accessible brick damper, 20, Fig. 2. The hot air then passes underneath the bottom of the retort through flue 21. Here it divides according to the number of separate combustion chambers arranged under the side walls and passes through the portholes 22 into the lower air chambers 23. The amount of air passing through each porthole 22 can be regulated by means of slide dampers to be adjusted once for ever for each oven. From the lower air chamber the air then passes to the combustion chamber through openings 24, corresponding with openings 13 in section A B. The hot gases, after having passed from the coke side of the oven to the pusher side through horizontal flue 15, then will descend through vertical flues 14 and pass through opening 13 into the air chamber underneath the retort, corresponding to 23 on the coke side, and will then fall through another vertical flue corresponding with 19 into the regenerator 25, which is being heated up. The cold gases, deprived of their surplus heat, will finally go through flue 26 to the stack. When checker work 25 has become hot and checker work 17, comparatively speaking, cold, then the reversing valves for gas and air for the entire battery are changed and the current of air and gas goes again in the opposite direction. The reversing takes place at half hourly intervals.

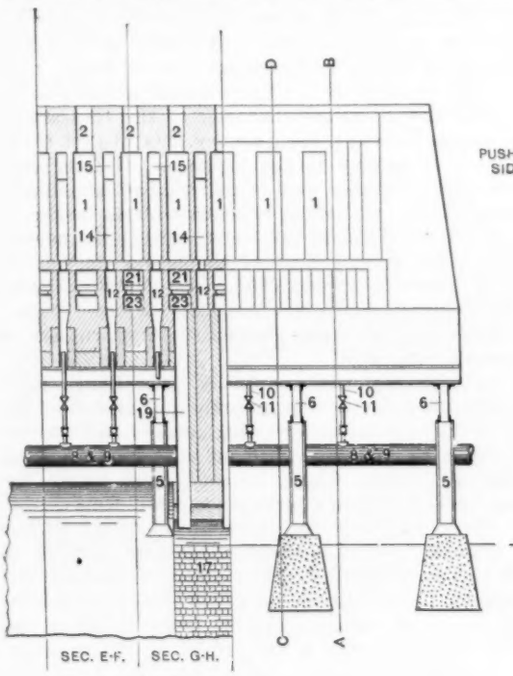

Fig. 1.—Cross Sections.

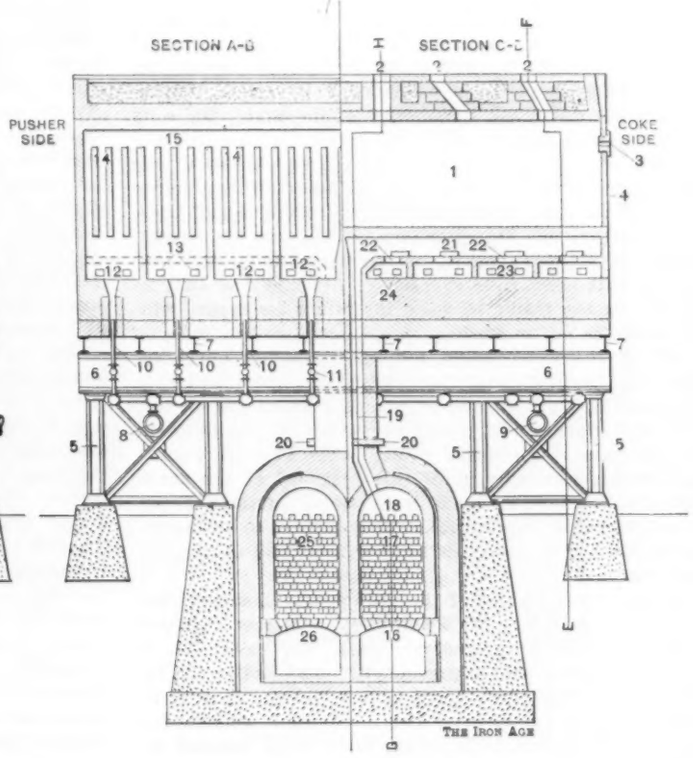

Fig. 2.—Longitudinal Sections.

THE NEW REGENERATIVE BY-PRODUCT COKE OVEN.—UNITED GAS & COKE COMPANY.

This arrangement assures a uniform heat distribution, which is very difficult to obtain in by-product coke ovens. Furthermore, the entire oven structure proper is independent of the regenerators and foundations, so that it is open to inspection without disturbing the operations. The accessibility of the fuel gas piping is also a desirable feature. The cost of the steel foundations is less than those of the old brick foundations of by-product coke ovens.

The ovens to be erected for the Maryland Steel Company will be of very large capacity; in fact, larger than ever built before. Their daily carbonizing capacity will be 8 net tons of coal, producing on average American coals 75 per cent., or 6 net tons of coke. The plant will be equipped throughout with labor saving machinery and modern gas and by-product apparatus.

Iron Ore Freights and the Minnesota Commission.

ST. PAUL, MINN., July 13, 1901.—Steps have been taken that may and probably will eliminate the matter of freight rates over the iron ore railroads of Minnesota from politics. For years these rates have caused political difficulties and the roads themselves have grown heartily tired of the results. Last winter the then State Railroad Commission made an arbitrary reduction of 20 cents a ton on all ore charges, and it was a matter of common notoriety that the order for reduction was issued for political effect. The roads did not rest quiet under the order, but applied for a rehearing to the commission that went into power a few days after it was issued. This rehearing is now in progress, and, as indicated in this correspondence some few weeks ago, an entirely new line of defense has been followed, and one that is quite likely to take the case, whatever may be the decision of the commission, into the courts of law for final adjudication. In fact, the commission may thus suggest.

In two days spent before the commission last week the roads developed a new line of evidence, to the effect that their traffic, being destined for points outside the State of its inception, is intrinsically interstate, and as such is not under the jurisdiction of the State, while its situation with regard to the Interstate Commerce Commission is to be determined. At the conclusion of the hearing the entire question was postponed till September 10, at which date the commission will have passed upon the question of its own jurisdiction, and its expert, chosen to make valuation of the roads under the contention that rates were excessive, will have had time to report. If the traffic be ruled interstate his report will, of course, never be made.

Of all the independent mining companies operating upon the Mesaba range, and these companies will ship this year between 25 and 30 per cent of all ore moved, only one appeared to uphold the hands of the State in its contention for reduced rates. This was the Penobscot Mining Company, until this year one of the small shippers, but now, owing to their control of their water, of considerable importance. They asked to intervene and to file a brief, and this brief will be filed during the next ten days.

A very brief *résumé* of the arguments of counsel for the roads will suffice for a summary. George Welwood Murray of New York, general counsel for the D., M. & N. road, opened the argument; he was followed by Frank B. Kellogg of St. Paul, counsel for the D. & I. R. road, and by M. D. Grover, also of St. Paul, counsel for the Eastern Minnesota Railway, these being assisted by J. H. Chandler of Chicago, general solicitor for the D. & I. R. road, and J. B. Cotton of Duluth, attorney for the D., M. & N. road.

Mr. Murray submitted three propositions: 1. Is the great bulk of this traffic interstate? 2. Is interstate traffic exclusively in the jurisdiction? and 3, with regard to traffic ending in Minnesota, what are the principles that govern the State Commission? The main contention was, of course, the second. Mr. Murray entered into a brief sketch of the efforts that were made by the States to control traffic and of the Interstate Commerce act of the Federal Constitution; he cited the great foundation case ruled upon by Chief Justice Marshall in 1824, and he brought up an array of precedents and opinions by the United States Supreme Court and by other courts that was most remarkable and convincing. Of these there is space to refer to but a few, and that of the steamer "Daniel Ball," familiar to all attorneys, is important. The "Ball" was a boat plying on waters of Michigan, entirely within the State, but as some parts of her cargoes were destined to find a market outside the State the court had deemed the vessel engaged in interstate commerce and had governed her accordingly. In this case there had been none of the usual evidences of through traffic, such as way bills, agreements, tariffs, &c., but it was called interstate just the same as though all these evidences had been complete. Numerous other cases, arising in Texas, California, Kansas and other States, were cited. From them rose the definition of interstate commerce, as Mr. Murray made it: "The passage of merchandise from one State to another by a journey practically continuous, even though the journey may be interrupted by delays, such as examinations at custom houses, by transshipment from car to car, from boat to rail, &c." Amplifying this, he asked attention to the fact that in making this definition he had "carefully excluded the question of common control of this traffic, through rates, through bills of lading, &c., for though these are indications of and accessories to the interstate character of the traffic, they are not necessary to it, and the main fact is the actual passage of merchandise from State to State. The Interstate Commerce act speaks of 'common control,' but the commerce clause of the Constitution is very much broader."

Among the cases cited were these: The "Daniel Ball" case, in which the opinion of the court had been that "whenever an article has begun to move as an article of trade from one State to another, commerce in that commodity between the States has commenced. The fact that several different and independent agencies," such as ore roads and steamship lines, for instance, "are employed in transporting the commodity, some acting entirely in one State," as the Minnesota ore roads, "and some acting through two or more States, does in no respect affect the interstate character of the transaction. To the extent to which each agency acts in that transportation it is subject to the regulation of Congress." Another case cited was that of the railroad commission of California that attempted to regulate fares inside the State, the route of travel for which carried the passenger outside the marine limit of the State. It was regarded as interstate traffic. The cases of Coe *vs.* Errol, Hardy *vs.* the Atchison road, Mattingly *vs.* the Pennsylvania Company, and others showed the same rulings by the Supreme Courts.

Mr. Kellogg, for the Duluth & Iron Range road, urged the importance of the question and explained the actions of the roads in withdrawing parts of their tariffs, and in filing, this week, a tariff on intrastate ore, from the mines to Duluth, which, he said, came within the scope of the commission's jurisdiction. Mr. Kellogg discussed the questions of the interstate character of the traffic originating in Minnesota mines and destined to Eastern furnaces; the question of control of such traffic, if interstate, by the Interstate Commerce Commission; can the roads be compelled to file State tariffs if the traffic is interstate, and is the power of Congress exclusive whether the traffic comes under the Interstate Commission as the law now stands or simply under the Constitution of the United States? Several of these questions answer themselves, and all are carefully considered points of law. Mr. Kellogg showed that while most commerce is confessedly interstate it is not subject to the Interstate Commission, being at the same time free from the State commissions. He traced briefly the history of the rise of the ore traffic of Minnesota, and why it went to points outside the State, and was known in point of fact to be destined for outside points when mined, that there was at present no Minnesota market for it, and several citations of authorities making this interstate traffic were adduced. While this traffic was interstate, even though there was no common arrangement for carriage outside the State, it was more confessedly so if such arrangement was present. That there was such arrangement Mr. Kellogg showed by citing the traffic arrangements of the Duluth, Missabe & Northern road and the Bessemer and Pittsburgh steamship companies, and the Duluth & Iron Range road with the Minnesota Steamship Company. That the road's proportion of this traffic was always 80 cents from Mesaba points he claimed was similar to the universal practice of joint rail and ocean rates, in which the ocean rate was fluctuating with the demand for room and the land rate was fixed and permanent by issued tariffs.

The fact that all ore docks, &c., were built into navigable waters under direction and authority of Congress, delegated to the Secretary of War, was used as an argument that the traffic was subject to national regulation, the docks, &c., being merely instruments for the facilita-

tion of such commerce. The case of Foster *vs.* Davenport, at Mobile, was in point. In it a tug was used to convey out to sea lighters loaded with goods to be shipped via the ships; held that the tug was an instrument of interstate commerce. Similar decisions in Chicago River were referred to. A cotton case at Galveston, in which the entire carriage was regarded by courts as interstate, though the first carrier was entirely within the State of Texas, was in evidence. The Supreme Court of Minnesota, in the case of the United States Express Company, had quoted approvingly that "the State cannot regulate that part of interstate commerce moved within its limit."

M. D. Grover closed briefly for the Eastern Minnesota Railway, the third ore carrying road, and that, though not cited to appear, had asked to intervene with the respondents. He claimed that traffic is interstate if, when delivered to the initial carrier, it is destined to points outside the State. It makes no difference how many acts influence its destination if the latter is without the State of its inception. The fact that ore is delivered on the ship at the edge of the State, and cannot be practically unloaded in the State, is evidence of the interstate character of the traffic.

"We think," said he, "that the power of Congress to regulate commerce extends not only to water but to the piers, &c., that may be necessary for Congress to oversee. The duty of the carrier of ore continues from the time ore is taken from the mine till it is on ship for lower lake ports. The carrier puts up a structure to facilitate interstate commerce; the structure is a nuisance and unlawful except it be employed for that purpose."

It was a notable condition of this ore rate case that but one of the independent mining companies were interested enough to intervene and allege unreasonableness in the rate. The greatest outside shippers are the Mahoning Company, whose freight bill is amounting to $100,000 or more a month, and Corrigan, McKinney & Co. Neither appeared. The Sharon Steel Company, who hope to ship 200,000 tons this year, are not in the case. The Colonial, Roberts and other independent Mesaba companies were not represented; neither were Pickands, Mather & Co., nor the Biwabik Mining Company.

D. E. W.

The Duquesne Library.—Ground has been broken at Duquesne, Pa., for the new Carnegie free library, which is being built by Andrew Carnegie for the benefit of the employees of the Duquesne Steel Works and blast furnaces, and also for the citizens of Duquesne. The work will be in charge of Elmer Hough, an engineer in the employ of the Carnegie Steel Company.

New Brown & Sharpe Measuring Instruments.

The Brown & Sharpe Mfg. Company of Providence, R. I., have just placed on the market three new measuring instruments. The first of the illustrations shows a Washburn & Moen standard wire gauge, which is 3¼ inches in diameter and about ⅛ inch thick. It is made from the best steel, tempered, adjusted, and all sizes are tempered after hardening. The gauge numbers run from 0 to 36.

The improved 29-degree screw thread gauge possesses advantages over the round gauge. The tool setting

Six-Inch Rule with Slide.

Washburn & Moen Standard Wire Gauge.

Twenty-nine Degree Screw Thread Gauge.

NEW BROWN & SHARPE MEASURING INSTRUMENTS.

gauge furnished with the old style gauge is done away with and a new feature added in the slot at one end which has an included angle of 29 degrees, making it possible to gauge the angle of the tool irrespective of the pitch. The shape of the new gauge is somewhat more convenient than the old style, and it also permits adding three pitches not given on the old gauge—namely, 1½, 1¾ and 2½. This gauge provides a correct standard to which tools can be ground to cut threads of a uniform angle, to take the place of square threads. The corner recess is used, when grinding off the point of the tool to the proper width, to test the angle of the side with the point. The angular notches on the sides are the proper width for the points of tools for the various pitches.

The rule is especially convenient for measuring against shoulders, width of collars, &c. The slide can be removed and the rule used in the ordinary way, or the slide can be reversed. The slide is formed to fit the thumb and has a tongue that slides in a groove on the side of the rule. These rules are 6 inches long, 9-16 inch wide, 1-16 inch thick, and are made with four graduations, as may be required.

Notes from Great Britain.

Offices of *The Iron Age*, Hastings House, Norfolk Street, Strand, London, W. C., July 6, 1901.

The Hickman-Hamilton Controversy.

We have not yet heard the last of the Hickman-Hamilton controversy, which has been so freely commented upon, both by British and American journals. A subordinate engineers' report appears in the half-yearly narrative report of the locomotive and carriage department of the Burmah Railways Company. I quote from it as follows: "Rolling stock: (a) Locomotive stock, 1. The last of the 20 new 'Mogul' type engines (B. R., Class G) received from the Baldwin Locomotive Works, Philadelphia, was turned out on March 31. No other new engines are on hand. We have increased the hight of the fuel fence on the tenders of most of the 20 Moguls to enable them to take sufficient wood to last between wood fueling stations, and we have now tested them for comparative consumption of wood fuel with F class doing the same work on the same section of line and on same trains, using five engines for 30 days each of each class. The result shows that the Moguls burnt nearly 26 per cent. more fuel than the F series. As a check on this I have taken out the consumption of all fuels of the whole 20 Moguls for the first five months of the year (June's figures being not yet available) on all services, and compared the result with that of our 20 latest F class for the same period on all services. This shows that the Moguls burnt 35.5 per cent. more per train mile and 23.5 per cent. more per vehicle mile than the F class, which confirms the above special test. It is therefore evident that the remark made in the last report to the effect that the Moguls did not compare unfavorably with the F class in coal consumption was rather premature. The figures then available were based on a small mileage only. It must be remembered, however, that the Moguls are all fitted with the vacuum brake, which is a fuel consumer, whereas the 20 F class were not fitted with it. We continue to be troubled with the results of cheap work in these engines; seven buffers (coupler bars) have broken during the half year, and also a reversing shaft arm, as well as the equalizer beam referred to in last report. Many of the tender buffer beams have had to be removed and the plates straightened and stiffened, as they had dished in badly with ordinary buffing blows. All the remainder now require to be treated similarly." The managing director of the Burmah Railways adds to these remarks the following comment: "I am desired to state for your information that the narrative report of the locomotive carriage superintendent for the half year ending June 30, 1900, to which you refer, was written during the absence of the locomotive superintendent by his deputy, that the views therein expressed are not in accord with the opinion given by the former officer in his preceding report; and that the matter is still under the consideration of our officers in Burmah."

The Standardizing of Iron and Steel.

Largely as the outcome of the efforts of H. J. Skelton, a committee has been appointed by the Institution of Civil Engineers, with the support of the Institutions of Mechanical Engineers and Naval Architects and of the Iron and Steel Institute, to consider what steps should be taken toward standardizing the various kinds of iron and steel sections. The members of the committee are: James Mansergh, president Institute Civil Engineers; Sir Benjamin Baker, Sir John Wolfe Barry, Sir Frederick Bramwell, A. Denny, J. Allen McDonald, E. Windsor Richards, Sir Douglas Fox, G. Ainsworth, William Dean, James Riley, Prof. W. C. Unwin, F.R.S., and Dr. J. H. T. Tudsbery (Honorary Secretary.) Leslie S. Robertson of 28 Victoria street, London, S. W., has been appointed secretary to this committee, which has already commenced its work by taking evidence tendered by engineers, manufacturers and contractors, bearing upon the subject of the inquiry.

Tubes.

At a recent meeting of the Tube Association representing manufacturers in Birmingham, South Staffordshire, Lancashire and the North of England, it was decided to advance the discounts of gas, water and steam tubes 2½ per cent. on the gross from July 1. This is equivalent to 7½ per cent. reduction on gas tubes and 5 per cent. on steam and water tubes.

Water Tube Boilers.

Some little time ago on the interim report of the Water Tube Boilers Committee I remarked that, notwithstanding the report being so adverse to the Belleville boilers, in the long run the Government would probably continue their use. This is now in the way of becoming an accomplished fact. In the House of Commons last night the First Lord of the Admiralty made the following remarks: "As regards the question of boilers there are men of great earnestness and sincerity of purpose who believe that cylindrical boilers are the only suitable boilers; but, on the other hand, there is what might be described as an overwhelming balance of opinion in favor of the water tube boiler. It has found favor in the opinion of experts, not only of this country, but of every other naval power, and I think it would be a strong measure in the face of such unanimity for the members of a board without any expert knowledge to decide against it. For the present, until cylindrical boilers are shown to produce the advantages now claimed for the water tube boilers, water tube boilers of one type or another must be the boilers of the navy. The committee which lately sat undoubtedly did say that the Belleville was not the boiler they recommended for future use in the navy. I believe it is quite true, as the noble earl said, that that boiler has been used with great success not only in the French navy, but in the French mercantile marine; and, speaking not as an expert, but as one endeavoring to arrive at a common sense view of the matter, I would say that it seems to me that the Belleville boiler if manufactured with perfect accuracy and treated with the most perfect skill will produce the results claimed for it; but for the rough and tumble service of a great navy such as ours perhaps it is too complicated an instrument. We are going on with our experiments. We are sparing no pains to arrive at a decision which will give us a standard boiler for his Majesty's Navy. It should never be forgotten in dealing with the Belleville boiler in this country as compared with foreign countries, that while we run the pressure up to 250 pounds, or nearly so, in foreign navies these boilers are seldom worked at so high a pressure as 200 pounds. It will be remembered that the committee recommended that where in ships under construction Belleville boilers could be taken out without delay to the completion of the ships, they should not be retained, and that other boilers should be substituted for them. The Board of Admiralty took the most rigid pains to deal with this question. We went through the lists of all the ships under construction; we eliminated those which had their boilers on board, and were nearly completed; and in respect of the remaining ships, we had the contractors before us and went with them into all the facts to determine whether we were obliged to eliminate any of these ships also. Finally we made a selection of ships in respect to which it appeared to us that there would be no further delay in the delivery of them if other types of water tube boilers were substituted for the Belleville type. But when we came to actual arrangements with the contractors to substitute other types for the Belleville boilers in these ships we decided in three additional cases to retain the Belleville type." This is, of course, the diplomatic way of letting down gently the committee who reported. So far as I can find out no substitute as yet has been found for the Belleville boiler.

The Markets.

The markets continue to be reasonably firm, a fairly brisk demand being noticeable in most lines. In best bars a steady trade continues to be done, while during this hot weather the decreased production of the mills will tend to stiffen prices. Prices on the whole are likely to remain firm for some weeks to come. The announcement that the United States Steel Corporation intend to keep themselves constantly and regularly in evidence in the British market has not produced a pleas-

ant sensation. With a view of raising prices an effort is being made to form an association of skelp makers in South Staffordshire and the Midland districts, and in furtherance of this object a meeting was held the day before yesterday to consider the situation. Owing to the strike in the tube trade business is practically at a standstill, and has been for many weeks, and the few orders offered are at figures below cost. In view of these facts an attempt will undoubtedly be made when the association comes into existence to raise prices. On the Continent, the finished iron trade in France is extremely quiet in nearly all its branches, and makers find it difficult to obtain enough work to keep their hands regularly employed. The absence of activity in the building trades is largely responsible for the prevailing dullness in the rolled iron industry, while the railways at the present time have few requirements. It is stated that before long an order is to be given out for 15,000 tons of rails for Tonkin. French stocks of girders are heavy, but in sheets the mills are fairly well employed. The steel trade in the Loire district does not yet show any signs of improvement. The rolled iron trade in Belgium is worse than ever, German firms underselling to a ruinous extent. In the German iron trade the demand on home account is irregular, and consumers are little disposed to pay the high prices that are being asked for. Trade returns for the first four months of the year in Germany show that the total quantity of iron and steel sent away was 583,146 tons, an increase of 129,452 compared with a similar period of 1900.

Iron and Coal Profits.

The Tredegar Iron & Coal Company have presented their twenty-eighth annual report for the year ended March 30. The profit on working accounts amounted to $680,000, a dividend of 7½ per cent. on A and B shares being declared. The Lochgelly Iron & Coal Company report a profit on the year's working of $165,000, while Greenwood & Batley, the well-known Yorkshire Electrical engineers, report a profit of $130,000. S. G. H.

Chester's Industrial Notes.

CHESTER, PA., July 17, 1901.—The Tindel-Morris Company, known as the Frankford Forge, were incorporated last year. Prior to this act the company acquired title to a tract of land containing 32 acres in the Borough of Eddystone, adjoining this city, their holdings extending from the right of way of the P. W. & B. Railroad to the Delaware River, on which the tract has a frontage of 400 feet. These works, now under course of construction and fast nearing completion, were made necessary to meet business conditions, and to relieve the company's large establishment at Ellwood City, Lawrence County, Pa., which hereafter will be devoted wholly to filling Western orders, while that at Eddystone will be utilized in running on orders from New England, the Eastern part of the Middle and the Southern Atlantic States. The matter of time consumed in the transportation of the output of the Ellwood plant to any part of the section of country mentioned will make an average saving of a week or ten days in the delivery of orders, while the work will be expedited by dividing the scope of territory into an Eastern and Western department. This company are not considered as a new enterprise, but have a history which covers more than 40 years of successful business, being established since 1860 at Frankford, Philadelphia, under the name of the Frankford Steel & Forging Company, and were continued at that place until 1895, when the plant was removed to Ellwood City.

The new or Eastern works, located at Eddystone, are admirably situated as to shipping facilities, having sidings from the P. W. & B. and the P. & R. railroads, which connect the enterprise directly with those two great trunk lines. The river front will be in the near future utilized as well for transportation purposes. The management expect to have the plant in operation by August 1.

John Deal, a practical electrical engineer, of Lansdowne, Pa., who for many years held a responsible position in the Baldwin Locomotive Works in Philadelphia, has invented an underground system of electrical motive power. Mr. Deal has been granted a patent, and a company have been formed, whose headquarters are at Camden, N. J. The capital stock of the concern is $200,000, divided into 4000 shares, at the par value of $50 per share. The Board of Directors are C. B. Ballinger of Lamberton, N. J.; William Bartram of Lansdowne, and W. Cloud Alexander of Media, Pa., with Mr. Alexander, secretary and treasurer. The company will be known as the American Universal Underground Electric Railway Company. Almost all the shares have been disposed of, and the invention is about ready to be placed on the market.

The Chicago Molders Strike.

After a series of conferences extending over so long a period that a settlement seemed assured, the Chicago foundrymen and their union molders have joined issues, and a strike began on Monday of this week. The final offer of the foundrymen was a minimum of $2.65 a day for bench and $2.85 for floor molders. This was an advance of 15 cents for bench and 10 cents for floor molders. The offer was rejected, the men demanding $3 for both classes of molders. In ordering this strike the local mills disregarded the authority of the officers and Executive Board of their national organization. According to the rules of the organization, permission must be obtained from the Executive Board of the national union before a strike can be called. In this case the Executive Board refused to sanction a strike, and advised the molders to accept the terms offered by the employers. By taking the opposite course the local iron molders have forfeited all claim to strike benefits from their national organization, and also all claims on organized labor in any trade for moral or financial support.

"A strike of the molders could not occur at a more opportune time for the employers," said President H. W. Hoyt of the National Founders' Association. "Since the machinists have been on strike many plants have continued operation simply to give the molders employment. They now have large quantities of castings piled up, and so can stand it to get along without the molders for some time. That is only one view, however. The strike is bound to be a calamity for many who are thrown out of employment. The bench molders have been uneasy for some time. They have felt that they were not getting enough wages, and have increased their numbers in the union until they could outvote the others and force a strike to secure their demands. They want to experiment in Chicago before they carry the fight to other cities. Detroit, St. Louis and Milwaukee foundrymen had voluntarily agreed to raise wages to a minimum equal to that offered by the Chicago employers if it was acepted here, but now the molders in those cities will have to fight their own fight in each place before they are granted the proposed advance."

The Columbia Dry Dock Company recently organized at Astoria, Ore., with a capital of $1,000,000, propose to construct at that port a big dry dock capable of accommodating the largest sized vessels. The site selected for the dock is near the mouth of Skipanon Creek. The incorporators of the concern are A. B. Hammond, D. K. Warren and Walter C. Smith, prominent local capitalists.

The Dodge Mfg. Company, manufacturers of power transmitting machinery, Mishawaka, Ind., are puzzling mill men by sending them a card bearing the word "Dodge" in capitals, with the center of each letter cut out, and having attached to it a small cube of pine wood, which is to be fitted so that it will pass through all the perforations and yet completely fill each opening. The company issued a Fourth of July souvenir edition of *Power and Transmission*, giving the history of their plant and an interesting description of the methods adopted in operating it.

The Iron Age

New York, Thursday, July 18, 1901.

DAVID WILLIAMS COMPANY, - - - - - - - PUBLISHERS.
CHARLES KIRCHHOFF, - - - - - - - - EDITOR.
GEO. W. COPE, - - - - - - - - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - - - - - - - - HARDWARE EDITOR.
JOHN S. KING, - - - - - - - - - BUSINESS MANAGER.

The Iron Age Index.

The Index to the reading matter of Volume LXVII of *The Iron Age*, for January 1 to July 1, 1901, is now from the press, and will be mailed to those subscribers of *The Iron Age* who will make application for it.

In order to relieve those who bind or file *The Iron Age* of the trouble of future applications for the semiannual Index, we have a special list to whom in the future the Index will be forwarded without further notice. Those who are now entered have had the Index mailed to them.

The Strike in the Western Rolling Mills.

What is generally incorrectly referred to as the steel strike may profoundly affect the iron industry of this country for many years to come. It is on the broader question at issue that we propose to dwell, the immediate effects upon the business being dealt with elsewhere in this issue. We have entered upon the first trial of strength between organized labor and the most conspicuous of the modern industrial consolidations.

With the decline of the sway of the puddler, as the result of the change from iron to steel, the power of the Amalgamated Association of Iron and Steel Workers waned steadily. In number and in importance the nonunion mills developed. The long depression contributed toward weakening the union organization, which, however, gained strength again during more prosperous times. There can be little doubt that the energetic work of the union leaders, aided by favoring conditions, has much increased its power during the past two years. It is only natural, too, that the creation of a series of great consolidations and ultimately of one giant corporation must have impressed labor with the necessity of drawing closer together. And it must be a strong argument for the leaders in seeking converts among the nonunion workers that the men practically in control of the operative departments of the principal corporations have for years successfully resisted any encroachments on the part of the Amalgamated Association. The recent merging of the National Steel Company and of the American Steel Hoop Company, the latter partially union, must have made that danger appear even more imminent.

It is true that the managers of the constituent companies of the United States Steel Corporation have consistently upheld the policy of maintaining the *status quo*. In this lies the great strength of their position, so far as it affects its influence upon general public opinion. How important a factor that may be it is difficult to judge. The press is apt to overrate it.

The contention of the manufacturers is undoubtedly sound, that they could not allow themselves to be forced into the position of coercing those of their men who do not desire to join the union into becoming members of the Amalgamated Association by signing the scale over their heads. On the other hand the Amalgamated Association claims that as a matter of fact the men in the nonunion mills have voluntarily joined their ranks, and proceeds to furnish proof thereof by calling them out, with the expectation of keeping them out. The officers of the organization claim that they have gone very much further than is generally suspected, and that they have in reserve ability to lay idle other important plants.

Doubt is thrown upon this statement through the course which they have pursued in the use of the plants of the American Tin Plate Company. That company had signed the scale. Practically all the plants are union mills. It did not need any exhibition of power to prove that fact. It was not alone a stupid breach of contract, but also a grave tactical mistake. It hurts the union more than it embarrasses the manufacturers. From a broader point of view it is an evidence of weakness.

There is one phase of the subject which has not been touched upon in the discussion of it which probably weighs more with the present management of the United States Steel Corporation, and that is the attitude of the Amalgamated Association as to output. Both the tin plate and the sheet mill scales fix maxima of production in a given time, a condition which is not tolerated in other lines in any of the great steel plants and rolling mills, and which would soon check that progress which is one of the greatest triumphs of the American rolling mill and steel works managers. Once firmly in the saddle, the Amalgamated Association would soon be found arrayed against the principle of getting the possible maximum out of plant by management and by constantly improving equipment.

In the trade the feeling is that for many reasons the men and the makers will not be allowed to drift too far apart, and that a compromise will be effected in which accomplished facts will be recognized and cardinal principles will be respected.

Coercive Trade Unionism.

An exceedingly interesting contribution to the literature of the labor question has been made by James A. Miller, a prominent metal roofing manufacturer of Chicago. It appeared in the June issue of the *Journal of Political Economy*, and has been reprinted as a separate pamphlet for more general distribution. The title is "Coercive Trade-Unionism as Illustrated by the Chicago Building Trades Conflict." This is the best account that has thus far appeared of the great labor conflict which paralyzed the building trade of Chicago for almost tl whole of 1900, and was therefore one of the most memorable occurrences in the annals of labor warfare. The causes which led up to this struggle are carefully and dispassionately stated. The language employed is as dignified and free from rancor as a report by a government commission, although it is well known that as an employer of labor directly connected with the Chicago building trades Mr. Miller has had most exasperating experiences.

He begins with a description of the formation, in 1890, of the Building Trades Council, an organization consisting of delegates from unions in the building trades in Cook County, in which Chicago is located. Through this central organization of workingmen their power was greatly increased, and employers were speedily made to feel it. To more completely monopolize the work on buildings, the unions in the Building Trades Council surrendered the work in shops to other unions. When this was done, the Building Material Trades Council was formed on the same plan, made up of planing mill hands, brick makers and others who were employed in shops getting material ready for use on buildings. These two bodies sustained such close relations

that the Building Trades Council refused to allow any of their members to handle Chicago material made by men not in the Material Trades Council, and on the other hand men belonging to the latter would strike if the owner of the factory in which they were employed should furnish material for a building on which a strike had been declared by the Building Trades Council. The "business agents" or walking delegates are naturally given much consideration by Mr. Miller, as through them the practical work is done. The manner in which they exercised their autocratic power is set forth, which often led to the declaration of a strike with no more cause than the statement of a business agent to the board that he had a grievance against the contractor doing the work. The unions finally attained such power over the employers that they collected fines amounting to thousands of dollars from employers accused of paying less than union wages to union men. These fines were collected by strikes or threats of strikes, but it often happened that the men alleged to be thus working for less than union wages were not fined, although the laws of their union imposed a penalty. They also prevented material made outside of Chicago from being used in Chicago, compelled the abandonment of labor saving machinery, arbitrarily restricted the employment of unskilled or partly skilled laborers, and ridiculously limited the amount of work to be done in a day. This power was gained gradually, through sympathetic strikes, the Building Trades Council being aided by the shortsightedness of some employers, who, to avoid immediate loss or for the sake of peace, were willing to sign any agreement presented by a union.

Mr. Miller states that the power exercised by the Building Trades Council was so great that it would have created a revolution if it had been claimed by a legally constituted government, and if it had been exercised with some pretense of regard for the welfare of the entire community. It was not until 1897 that the employers began to organize to resist the aggressions of the workmen's unions, but for two years nothing was accomplished. In 1899 they formed the Building Contractors' Council, and their first act was to arrange for a conference with the Building Trades Council for the purpose of endeavoring to peacefully abate grievances, but the conference was barren of results. The next step taken was in November, 1899, when they issued an ultimatum to the Building Trades Council, refusing after the following first of January to recognize any limitation on the work performed by a man in a working day, any restriction of the use of machinery, the right of any person to interfere with workmen during working hours, the sympathetic strike and the restriction of apprentices. This was followed by efforts of material men and others to arrange an arbitration, but nothing was accomplished. The issue was at last squarely drawn and both sides prepared for a contest, with the unions confident of their power.

The main events of the struggle are interestingly portrayed. After the fight was fairly under way, and new men were being employed by contractors, assaults and riots and destruction of property were of daily occurrence. The police authorities seemingly did everything they were asked to do, but they utterly failed to stop the assaults. About this time, says Mr. Miller, the city of Chicago was in need of money, and the banks were asked "for the credit of the city" to advance it until the tax receipts came in. The city authorities were told that the credit of Chicago was then in the hands of those who could, but did not, stop these assaults, and who could, but did not, enforce the laws, and that the city could have no money from the banks until those in authority at the City Hall enforced the laws and suppressed the assaults and riots. Mr. Miller says that these demands were complied with, there were no more riots and only occasionally isolated assaults. The contractors had not only been fighting the unions, but those holding elective political offices, who were catering to the so-called labor vote. Eventually, with this opposition less effective, the contractors were able to make satisfactory terms with the unions on the lines laid down in their ultimatum, and peace was restored.

After reviewing the special points raised in this eventful struggle, Mr. Miller comes to the conclusion that the remedy for coercive trade unionism, of which the Chicago building trades furnished such a flagrant example, is to be found in the courts. After citing numerous judicial decisions in various States, and presenting a strong line of reasoning in favor of his position, he says that no new general legislation is required to enable employers to get full relief. All that is needed is a realization of the remedies that already exist and more frequent resort to them. Indications are not wanting in recent decisions of a strong tendency toward judicial prevention of the interference with the business of the complainants, not only by force directly applied against the employer, but by strikes caused and enforced by unlawful and oppressive coercion exercised by the unions over their own members. It may be added to what Mr. Miller has written that of late the elective judiciary in a number of manufacturing States has begun to manifest commendable independence in handling labor questions. For a long time our federal judges, appointed for life, had been the sole exponents of judicial fearlessness in safeguarding the rights of employers.

The Copper Situation.

The suspicion is growing that copper is becoming decidedly topheavy. The mining industry has enjoyed years of unparallelel prosperity because the demand all over the world has increased in recent years by leaps and bounds. The copper trade is so accustomed to the relatively high values for the red metal in recent years that every one has forgotten that 16 cents is really an abnormal price, and that 10 to 12 cents is very remunerative to the producers. When first values commenced to soar many were convinced that it would take only a brief period before new mines would rush into the ranks of producers and that the old companies would rapidly expand their output. Men experienced in copper mining were not so sanguine, and the events have justified them. But it does not follow that because new enterprises reached the producing stage slowly they must naturally be failures. One by one they are now falling into line, and while none of them in this country are really great singly, in the aggregate they are telling on the production, which has now reached in this country the enormous total of 600,000,000 pounds annually. It has been argued, however, with much force that the world's requirements call for a certain annual increase in the production, that that normal increase has not been exceeded in spite of the stimulus of high prices, and that the future additions to output in sight are not above that natural development when account is duly taken of the fact that some of the older mines promise to drop out before many years elapse, because they are exhausted.

It is probably true that there is not much cause for alarm in the past and prospective increase in the production of copper. The serious danger lies in the evidences of a heavy decline in the consumption, temporary though

it be. Our own country has the keenest interest in this question, not only as the largest producer, but also as the heaviest consumer and the greatest exporter of copper. Next in line, really outstripping Great Britain as a consumer of copper, is Germany whose requirements last year were estimated at 118,000 gross tons. Earlier in the year leading German copper merchants expressed the belief that the industrial depression in that country would not adversely influence the consumption there because the electrical development would go on. Now that affairs in that country have closely approached a financial and industrial crisis, in which electrical manufacturing concerns and undertakings are conspicuously involved, it is clear that the German consumption of copper must be seriously affected.

Europe takes nearly all of the ingots and wire bars which we export. During the first half of 1900 all the leading countries were drawing upon us heavily. This year their purchases have fallen off very greatly, as the following table of our exports of copper during the first five months of 1900 and of 1901 clearly show:

Exports of Copper.

Month.	1900. Pounds.	1901. Pounds.
January	28,389,422	22,270,030
February	31,893,070	18,211,160
March	39,439,208	14,312,279
April	29,103,698	9,935,486
May	28,417,805	24,159,382
Totals	157,243,203	88,888,337

Here, therefore, we have a falling off of nearly 70,000,000 pounds of copper exports, when in the same period our production has gone on unabated.

Our own country is subject to the most extraordinary fluctuations in the demand, but it is quite out of the question that we have been taking care of this additional supply on top of our heavy requirements of last year, particularly since we accumulated some stock of unsold copper in 1900.

On its merits, therefore, the situation is adverse to a continuation of the present high prices, but it is a very grave question whether the merits of the metal will be allowed to shape the course of values. In the copper trade, more even than in any branch of the metal industry at large, the stock exchanges play a very important part. The position of great operators on the one or the other side of the mining stock market may cause them for a long time to give the metal support in the face of adverse circumstances, or to engineer an international break.

National Tube Company.—All the employees of the pipe mills of the National Tube Works, of the National Tube Company, at McKeesport, Pa., have been granted an advance in wages that will average about 10 per cent. None of the works of this concern have been affected by the strike, but all are in operation to full capacity.

There are documented at the port of Duluth, Minn., 287 ships of a tonnage of 371,776. Four years ago there was nothing there but a few harbor tugs and scows. During this month this total will be increased by the 22 ships of the Minnesota Steamship Company, with about 80,000 tons. The summary at present is:

	Number.	Tons gross.
Sailing vessels, steel	13	45,777
Sailing vessels, wood	13	9,788
Barges, steel	23	30,826
Barges, wood	66	10,229
Steamships, steel	77	239,532
Steamships, wood	95	35,624
Totals	287	371,776

A battery of Davis ore roasting kilns is to be erected at the blast furnace of the Burden Iron Company of Troy, N. Y.

PERSONAL.

Charles M. Schwab, president of United States Steel Corporation, has offered to build a new Catholic Church in Braddock, Pa., for St. Thomas congregation, at a cost not exceeding $50,000.

Macgilvray Shiras, formerly with the Dominion Iron & Steel Company, at Cape Breton, N. S., has returned to Pittsburgh and will become assistant to D. G. Kerr, ore agent for United States Steel Corporation, with headquarters in the Carnegie Building. Mr. Shiras was formerly connected with the Duquesne blast furnaces.

Walter Rachels, chief engineer at the Ohio works of the National Steel Company, Youngstown, Ohio, has resigned and will enter the offices of Julian Kennedy, consulting engineer, at Pittsburgh. Willis McKee has been appointed to succeed Mr. Rachel.

H. C. Torrance, manager of the Pittsburgh office of the Brown Hoisting Machinery Company, Cleveland, O., has sailed for Europe in the interests of his firm.

Harry B. Weaver has been appointed superintendent of the Burden Iron Works at Troy, N. Y.

George Westinghouse, Jr., who recently returned from a European trip, has again sailed for England on business connected with the new plant of the British Westinghouse Electric & Mfg. Company, of which concern he is the president.

W. D. McRae has been appointed manager of the Union Machine Company, Nashville, Tenn., to succeed W. E. Ewing.

H. C. Duggan has resigned his position as superintendent of the South Bend Malleable Iron Company, South Bend, Ind., and in a short time will assume the general management of the American Malleable Casting Company of Chicago.

N. L. Norris has been made general manager of the new plant of the Banner Electric Company, at Youngstown, Ohio. Mr. Norris was formerly in the auditing department of the Youngstown works of the National Steel Company.

C. E. Stafford, who has been long connected with the Illinois Steel Company of Chicago, has been elected president of the Tidewater Steel Company, Thurlow, Pa.

Henry R. Towne will spend two months in Europe. He has gone to Kissingen, sailing last week.

David Williams, president of the David Williams Company, publishers of *The Iron Age*, is expected back from abroad next week.

L. K. Hirsch of Chicago, a prominent dealer in old railway material, was married on the 3d inst., and on the 11th sailed with his bride on the "Deutschland" for a tour round the world.

C. R. H. Cunningham has resigned his position with Chambers Bros. & Co. to accept one as general manager for the Chester Steel Casting Company, Chester, Pa.

A. R. Whitney of Morristown, N. J., who retired last year after being prominently connected with the New York iron trade for a long period, has started in a private car for a two months' tour of the West, accompanied by his family.

L. R. Whyte, who formerly represented the Frick Company of Waynesboro, Pa., in the Pittsburgh district, but who went to Australia in the interests of that concern, has returned to Pittsburgh and associated himself with E. F. Austin, who represents the Stilwell-Bierce and Smith-Vaile companies in the Pittsburgh district. Mr. Whyte will have charge of the engineering department of the Pittsburgh office.

H. B. Guthrie, formerly district sales agent for the American Steel Hoop Company, at Pittsburgh, resigned his connection with that firm on July 1 and has become an active member in the firm of Slease & Co., bankers and brokers, in the Empire Building, Pittsburgh, the style of the firm having been changed to Guthrie, Slease & Co. Mr. Guthrie is a brother of Charles S. Guthrie, formerly president of the American Steel Hoop Company.

The Great Strike in the Sheet, Hoop and Bar Mills.

On Saturday night, July 13, President Shaffer of the Amalgamated Association sent out a strike order from Pittsburgh to all the union mills of the American Sheet Steel Company, the American Tin Plate Company and the American Steel Hoop Company, ordering all Amalgamated men not to go to work Monday, July 15, as a strike was on. This order came as the result of the failure to arrive at a settlement of the trouble which has existed in the mills since late in June,when the officials of the American Sheet Steel Company and the American Steel Hoop Company refused to sign the scale for their nonunion mills as demanded by the Amalgamated Association. As a result of efforts on both sides to settle the trouble before it would grow more serious, another conference was arranged between representatives of the Amalgamated Association and the two concerns named above, and which convened in Pittsburgh on Thursday, July 11.

It was confidently expected that the trouble would be fixed up and a general strike averted. It was realized that both sides had much to lose by going into a fight, the employees having steady work at the highest rate of wages they have ever been paid, while there was an enormous demand for the products of the mills operated by the American Sheet Steel Company, the American Tin Plate Company and the American Steel Hoop Company. Aside from this the stock market was a feature in the situation, as a long strike would be certain to depress the stocks of the parent company. There was also the fact to be considered that enormous profits were being realized and which were needed to meet the heavy fixed charges of the United States Steel Corporation on every ton of their output. In spite of all this a three days' conference of the committees failed to effect a settlement, and after the adjournment on Saturday night President Shaffer issued his strike order.

The present trouble really began early in the present year, when the W. Dewees Wood Works of the American Sheet Steel Company, at McKeesport, were closed down for about a week, owing to the discharge of a number of men who had joined the Amalgamated Association. At that time the contention was made that the Amalgamated Association had the right to attempt to organize the mill, but this was disputed, the claim of the American Sheet Steel Company officials being that the mill was to be let alone by the Amalgamated Association until the termination of the wage scale in June. On this basis a truce was arranged, but the trouble was regarded as a forerunner of what would come, should the Amalgamated Association insist on being allowed to organize lodges in mills that heretofore had been nonunion and also demand that the Amalgamated scale be signed for them.

When the Amalgamated Association made up its wage scales for the sheet, hoop, bar, cotton tie and tin plate mills for the year beginning July 1, the advances in wages demanded were conservative and were readily granted by the manufacturers with only slight changes. However, the Amalgamated Association was prepared to make a more important demand and that was that the scale be signed for all the nonunion mills of the three companies named above. This was refused, the officials of the concerns claiming that in many of their mills the Amalgamated Association had no foothold and that the employees in these mills did not care to become affiliated with labor organizations of any kind. Both sides stood firm in their respective positions, and as stated above, a three days' conference ended Saturday night in the biggest strike being declared that has taken place since the Homestead strike of nearly ten years ago.

The American Tin Plate Company.

The American Tin Plate Company, whose mills have all been closed, with the exception of the Monessen Works, by the strike order of President Shaffer, had no dispute with the Amalgamated Association, but signed the scale as soon as it was presented. Their mills have been shut down by reason of a clause in article 35 of the constitution of the Amalgamated Association, which reads as follows:

"Should one mill in a combine or trust have a difficulty all mills in said combine or trust shall cease work until such grievance is settled."

The American Tin Plate Company will be affected most by the strike, as all their mills are union, with the single exception of the Monessen plant, which operates under a special scale. A full list of the plants owned by the American Tin Plate Company, and which are all closed at this writing on account of the strike, is as follows:

American works, Elwood, Ind., 26 mills; Anderson works, Anderson, Ind., 7 mills; Atlanta works, Atlanta, Ind., 6 mills; Banfield works, Irondale, Ohio, 4 mills; Beaver works, Lisbon, Ohio, 7 mills; Canonsburg works, Canonsburg, Pa., 5 mills; Champion works, Muskegon, Mich., 8 mills; Crescent works, Cleveland, Ohio, 6 mills; Cumberland works, Cumberland, Md., 5 mills (no tin house); Cambridge works, Cambridge, Ohio, 6 mills; Ellwood works, Ellwood City, Pa., 6 mills; Falcon works, Niles, Ohio, 6 mills; Great Western works, Joliet, Ill., 4 mills; Humbert works, Connellsville, Pa., 6 mills; Irondale works, Middleton, Ind., 6 mills; Johnstown works, Johnstown, Pa., 2 mills; La Belle works, Wheeling, Pa., 10 mills; Laughlin works, Martin's Ferry, Ohio, 14 mills, adding 8 more mills; Monongahela works, Pittsburgh, Pa., 14 mills; Morewood works, Gas City, Ind., 8 mills; New Castle works, New Castle, Pa., 20 mills; Pittsburgh works, New Kensington, Pa., 6 mills; Reeves works, Canal Dover, Ohio, 7 mills; Pennsylvania works, New Kensington, Pa., 6 mills; Shenango works, New Castle, Pa., 30 mills; Star works, Pittsburgh, Pa., 8 mills; United States works, McKeesport, Pa., 11 mills.

The only tin plate works owned by American Tin Plate Company and which is running is the Monessen Works, at Monessen, Pa.

The American Sheet Steel Company.

The American Sheet Steel Company are fortunate in having some of their largest works running nonunion, and these will likely continue to run right along, in spite of the claims of President Shaffer that his organization is strong enough to shut them down. The nonunion sheet mills which will likely run are the Apollo Works, at Vandergrift and Apollo; the old Meadow Works, at Scottdale; Saltsburg Works, at Saltsburg; Kirkpatrick Works, at Leechburg, and the Scottdale Works, at Scottdale. These works are able to turn out nearly half the entire product of sheets made by the American Sheet Steel Company.

The American Steel Hoop Company.

The American Steel Hoop Company have three of their largest works, all in the Pittsburgh district, unorganized. These are the Painter Works, the Clark Works and the Lindsay & McCutcheon Works. The Pomeroy Mills, at Pomeroy, Ohio, are also nonunion, as are the Portage Works, at Duncansville, Pa.

The Statements of the Manufacturers.

After the adjournment on Saturday evening, Warner Arms of the American Tin Plate Company made a statement, as follows:

"The American Tin Plate Company have only one nonunion mill. We requested the privilege of making a special scale for this mill, and of signing the same. This was refused, and our company were given to understand all our men in all tin mills would be called out, even though the scale has been signed for all tin mills. The privilege requested would settle all differences between the American Tin Plate Company and the Amalgamated Association."

Veryl Preston of the American Steel Hoop Company, after the conference was over, gave out the following statement: "The conference between the Amalgamated Association and the American Steel Hoop, American Sheet Steel and American Tin Plate companies failed to come to an agreement, because the Amalgamated Association did not recede from its original position, which

was that the three companies in interest should sign the scale for all their mills without regard to whether those mills had in the past belonged to the Amalgamated Association or not. The manufacturers did not refuse their right to organize, but having many men in the mills not in the Amalgamated Association who did not wish to become Amalgamated Association men, claimed that they must respect those men in their wishes as well as those who are members of the Amalgamated Association. In order to effect a compromise the manufacturers offered to sign for several mills that have always in the past been out of the Amalgamated Association. No compromise was offered by the Amalgamated Association."

The Amalgamated Association.

President Shaffer of the Amalgamated Association issued a long detailed statement covering the men's side of the case, and giving his reasons why a settlement was not reached. President Shaffer's statement is as follows: "Yesterday morning our committee presented to the manufacturers the following proposition:

"'We, the General Executive Board of the Amalgamated Association, hereby repeat our first request for the signing of the scales for all the mills owned and controlled by the American Sheet Steel, American Steel Hoop and American Tin Plate companies, which should be conceded because in our opinion it is reasonable and just. We agree if the scales are signed, as stated above, to classify Monessen as a special mill, and arrange a scale in accordance; also that there shall be a reconstruction of the scale for mills working hoop and cotton ties exclusively. We also agree that if our work of organizing mills outside the possessions of the above named companies should cause the shutting down of plants or cutting out of men, there shall be no interference with the operation of the mills belonging to or operated by the above named three companies during the scale year. This agreement is to abrogate all contracts signed by the men of these companies in which they agree not to join or be connected with the Amalgamated Association or any other labor organization.'"

The manufacturers refused to accept this proposition, and came back with a counter one, which the Amalgamated Association refused.

There is no doubt but that the labor situation in the Central West is in a critical condition, and the declaring of a strike is deeply deplored by general business interests. On Monday morning practically all the men in the Painter Works of the American Steel Hoop Company, in Pittsburgh, and the Lindsay & McCutcheon Works, in Allegheny, refused to work, and both these mills are tied up. The Painter Works is probably the largest owned by the American Steel Hoop Company, and has always been a union mill until a few years ago, when J. Painter & Sons Company, who owned it, refused to sign the Amalgamated scale, and the mill has been nonunion ever since. The Clark Works, owned by the American Steel Hoop Company, was in operation on Monday to nearly full capacity.

President Shaffer theatens to call out all the Amalgamated men in the sheet mills of the National Steel Company and in the steel and finishing mills of the Federal Steel Company, both constituent interests of the United States Steel Corporation. It is estimated that at the present time 35,000 to 40,000 men employed in the sheet, hoop and tin mills are idle, and this number will be very largely increased if President Shaffer carries out his threat to call out more men.

The important question in this labor battle at the present time is how strong is the Amalgamated Association in the nonunion mills? President Shaffer loudly proclaims that his organization has lodges in every nonunion mill operated by the sheet, tin and hoop companies, and has also gone so far as to claim that lodges exist among employees at the Homestead Steel Works and other plants of the Carnegie Steel Company. The events of the next two or three days will largely determine whether the facts are as stated by President Shaffer.

Strike Situation Tuesday Evening.

By Tuesday evening the Amalgamated Association have succeeded, by desperate efforts, in calling out nearly all the men at the Clark Works of the American Steel Hoop Company in Pittsburgh. This mill has been nonunion for years, but the Amalgamated Association claims to have organized a lodge among the men in the mill and which has a large membership. All the finishing mills in this plant were idle Tuesday evening, but the heaters were working and gave no signs of going on a strike. The Monessen Works of the American Steel Hoop Company, at Monessen, Pa., were also closed down on Tuesday afternoon, only a few men working. The Amalgamated Association has succeeded in tying up the four mills of American Steel Hoop Company in the Pittsburgh district, these being the Painter, Clark, Lindsay-McCutcheon and Monessen works. All the mills of American Steel Hoop Company in the Youngstown district are closed, but the Portage Works, at Duncansville, are running.

The situation in the tin mill of the American Tin Plate Company is unchanged. All the works are closed tight with the single exception of the Monessen plant. There has been no attempt so far by the managers of the different tin plate works to get new men to start the works up.

In the sheet mills the situation is unchanged from that of yesterday. All the mills that signed the sheet scale are shut down tight, but the seven or eight nonunion mills at Vandergrift, McKeesport, Leechburg and elsewhere are in full operation and the men have given no signs of going out. The Amalgamated Association is making all sorts of claims as to its strength in the nonunion mills, but so far has failed to close down a single nonunion sheet mill. It is understood that President Shaffer is preparing a circular letter which will be sent out to the Amalgamated members, setting forth in detail the causes which led up to the strike.

Wednesday Noon.

PITTSBURGH, PA., July 17, 1901.—(*By Telegraph.*)—On Wednesday at noon the four mills of the American Steel Hoop Company in the Pittsburgh district, these being the Painter, Clark, Lindsay & McCutcheon and Monessen works, were practically idle, very few men being at work. However, this certainly is not likely to last long, as these men had no grievance and simply went out on strike through sympathy. As a rue, sympathy strikes are short lived, and the present one will not likely prove an exception.

The nonunion sheet mills of the American Sheet Steel Company are all running full this morning, with the exception of the Wellsville Works, and Persifor F. Smith, manager of this plant, states that it will be started Thursday morning and run as a nonunion mill. It is thought that all the men who did not join the Amalgamated, together with 50 per cent. of those that did, will return to work.

The situation with the American Tin Plate Company is unchanged. All the plants of this concern are idle, with the single exception of the Monessen Works, where the men have signed individual contracts, and it is believed will keep them.

An unusual feature of the present strike is that for the first time in the history of the Amalgamated Association it has not the sympathy of the public in declaring a strike because of the refusal of the United States Steel Corporation officials to sign the scale for their nonunion plants. The officials of the Amalgamated Association were not unanimous in declaring a strike, but, on the contrary, President Shaffer was strongly opposed in the course he pursued by some of his men. Had the United States Steel Corporation signed the scale this year for their nonunion mills, it is certain that the Amalgamated Association would have demanded that the scale be signed for the Homestead Steel Works, Duquesne, Edgar Thomson and other plants of the Carnegie Steel Company, when the present scale expires on December 31 next. Ever since 1892, when the Amalgamated lost all the Carnegie mills, they have made strenuous efforts to regain a foothold in these mills, but

without success. The men are being too well paid and have such steady employment that they do not desire to tie up with the Amalgamated Association or any other labor organization, for that matter.

While nothing official has been given out, there is one thing certain, and that is if the United States Steel Corporation have gone into this fight to stay with it to a finish, it means the sure defeat and ultimate disruption of the Amalgamated Association. The only real strength that body has is in the sheet and tin plate mills, and in the former they do not control mills making half the output of the American Sheet Steel Company. The present strike is largely one of sympathy, and after the men have been out a week or two, and have had time to study the conditions surrounding the strike, there is no doubt but that lots of them will return to work. For this reason it would seem to be an opportune time for the United States Steel Corporation to stamp out unionism in all their mills. To do this will cost some money, perhaps millions, but this is a mere bagatelle when the object gained is taken into account. The United States Steel Corporation are too large a body and have too much at stake to be subjected to the whims and caprices of an organization like the Amalgamated Association, which violates its own contracts, as it has done in the present case, in calling out men in mills where the scales have been signed.

Amalgamated Scale Signers.

Most of the independent bar iron and sheet mills have signed the Amalgamated scale for 1901, and are as follows:

Tyler Tube Company, Washington, Pa.
Waynesburg Sheet & Tin Mill, Waynesburg, Pa.
American Rolling Mill, Muncie, Ind.
Emlyn Iron Works, East Chicago, Ind.
American Tinplate Company.
Republic Iron & Steel Company.
Top Mill Sheet Department, Wheeling Steel & Iron Company.
American Rolling Mill Company, Middletown, Ohio.
American Rolling Mill Company, Muskegon, Mich.
Zug & Co., Limited, Pittsburgh, Pa.
Tennessee Coal & Iron Company, Bessemer, Ala.
Phillips, Nimick & Co., Pittsburgh, Pa.
N. & G. Taylor Company, Cumberland, Md.
Stewart Iron Company, Limited, Sharon, Pa.
Sharon Tin Plate Company, South Sharon, Pa.
Columbus plant, Standard Chain Company, Columbus, Ohio.
National Tube Company, Continental Department, Pittsburgh, Pa.
Eagle Horseshoe Company, Joliet, Ill.
Empire Rolling Mill Company, Cleveland, Ohio.
Pittsburgh Forge & Iron Company, Pittsburgh, Pa.
Southern Car & Foundry Company, Anniston, Ala.
Helmbacher Forge & Rolling Mill Company, St. Louis, Mo.
Niles Iron & Sheet Company, Niles, Ohio.
Lake Erie Iron Company, Cleveland, Ohio.
Fort Pitt Iron & Steel Company, Pittsburgh, Pa.
Sheet Mills of the Republic Iron Works, Pittsburgh, Pa.
Lockhart Iron & Steel Works, McKee's Rocks, Pa.
Brown & Co., Pittsburgh, Pa.
Wheeling Steel & Iron Company, Wheeling, W. Va.
Kansas City Nut & Bolt Company, Kansas City, Mo.
Sheet Bar Mills Republic Iron Works, National Tube Company, Pittsburgh, Pa.
Newport Rolling Mill, Newport, Ky.
Continental Iron Company, Wheatland, Pa.
Kittanning Iron & Steel Mfg. Company, Kittanning, Pa.
Westerman Rolling Mill Company, Lockport, N. Y.

The Greenville, Pa., gas and water companies have been optioned to the syndicate which is building the electric railway from Sharon, Pa., to Youngstown, Ohio. The syndicate now own the electric lighting, power and gas plants of Sharon, Sharpsville and Youngstown, and have franchises for several other towns in that district. The Greenville Electric Light Company also hold a franchise for steam heating and have quite a large steam heating business, using the exhaust steam from the electric plant's engines. H. W. Whipple of New York City is the head of the purchasing syndicate.

The Shenango Valley plant of the National Steel Company, at New Castle, will run steadily through the summer, according to present arrangements. It is several years since so many Shenango Valley mills were running during the summer season.

The Union Steel Company.

The new rod, wire and wire nail mills of the Union Steel Company, Donora, Pa., which have been in the course of erection for a year and a half are fast approaching completion and the firm expect to start one rod mill and a part of the wire and wire nail mills late this month. The Union Steel Company have been materially enlarging their plans and have decided to commence the erection as soon as possible of two blast furnaces and an open hearth steel plant. It was always the intention of the firm to provide their own raw material, and original plans were for the building of one blast furnace and sufficient steel capacity to take care of the finishing mills. Recently, however, the concern have decided to very much enlarge their capacity for making raw material and will build two blast furnaces 90 feet high by 22 feet in diameter, and either 10 or 12 50-ton capacity open hearth furnaces. The blast furnaces will be modeled much on the same lines as the Duquesne furnaces of the Carnegie Steel Company, but will not, as reported, be larger than these stacks. Plans are being drawn for the furnaces, and it is probable that the contract for their erection will be given to a Pittsburg concern.

W. H. Donner, president of the Union Steel Company, has recently spent a good deal of his time in the ore regions, acquiring ore properties for the purpose of mining their own ore. The Donora Mining Company, an identified interest of the Union Steel Company, have been organized for the purpose of developing their ore properties recently secured by the Union Steel Company in the Lake Superior regions. The company have been capitalized at $500,000, and have the same officials as the Union Steel Company.

The contract for five large blowing engines for the blast furnaces has been given to the Mesta Machine Company of Pittsburgh. These engines will be of the vertical cross compound condensing type and will weigh 400 tons per pair. They will have cylinders 44 and 84 inches in diameter and 60-inch stroke; their total height will be 48 feet from the floor line to the top of the cylinders. They will be equipped with the Julian Kennedy air valve. The contract price of these engines is said to approximate $250,000.

It is probable that the contracts for the balance of the equipment for these two furnaces and the open hearth mill will be placed by the Union Steel Company in a short time. Julian Kennedy of Pittsburgh is consulting engineer for the erection of the plant. By acquiring ore properties and having their own blast furnaces and steel mills the Union Steel Company will be able to make rods, wire and wire nails from the ore up. The concern have already been a seller of rods, wire and wire nails to some extent for August delivery.

The Guggenheim Smelting Company of Perth Amboy, N. J., have a customs protest pending before the Board of United States General Appraisers involving the proper interpretation to be placed upon certain provisions of section 29, act of 1897. As the law stands at present metals intended for reduction here and exportation afterward are permitted to be treated as bonded merchandise. The importers claim that the trade should only be compelled to export 90 per cent. of the refined metal, whereas the Government contends that the importers must export 90 per cent. of what the metals assay when imported. It is said to be impossible to do this with alloys.

Industrial conditions in the Shenango Valley were never more prosperous. The sale of large interests in the Sharon Steel Company by a Sharon holder has made a large sum of money available for investment in new iron enterprises. It is reported that F. H. Buhl, ex-president of the Sharon Steel Company, will be interested in the large independent steel mills which Henry K. Wick and others have in view to build at Youngstown. Mr. Buhl is also interested in a company who are to build a forge plant at Sharon. He has purchased a fine lot on East State street, Sharon, and report has it that he will erect thereon a free public library for the city.

The History of the Steel Plow.

BY R. L. ARDREY, CHICAGO.

The Mississippi Valley contains the largest area in the world of level and fertile land. The soil of the central prairie States is so inexhaustible in its fertility that continuous cultivation for two and three generations under a judicious system of crop rotation shows no appreciable loss in its productiveness. The use of commercial or artificial fertilizers, which is considered necessary in the Eastern States and in the old world, is practically unknown in the West. Even manure is not saved and utilized with any care, excepting on the most carefully managed farms; and its continued application on the rich soil of the "corn belt" has a stimulating effect on vegetation that makes it difficult to raise small grains, because the straw grows so rank that it will not stand up until the crop is harvested. This enormous empire, lying on the map in the form of a giant cornucopia whose abundance overflows toward the east, produces more than three-fourths of the cereal crops of the United States; and in many seasons in the past 20 years its surplus crops have proved embarrassing to the farmer by overloading the market and depressing prices to a point that made agriculture unprofitable.

The key to the cultivation of this agricultural empire is the steel plow. When the first settlers came to the prairie States, in the early part of the past century, they were obliged to limit their cultivation of the soil to the narrow districts of timber land which could be cleared with the axe and the grub hoe. They had no means of breaking the hard, tough prairie sod that spread like an impenetrable blanket over the wealth of fertility of the grand prairie. The wood and cast iron plows that they brought with them were useless.

Who first made a "breaker" with a steel share that would cut the prairie sod is a fact that, to the writer's knowledge, has never been determined. Probably a hundred blacksmiths in widely separated communities would claim the honor, could they be brought back from beneath the soil that they helped to conquer. Rod breakers, however, came into general use during the second quarter of the century—plows with very strong, sharp shares of steel, and rods projecting backward and upward to turn the furrow, instead of a moldboard. Even with a very sharp share it was necessary to use two and three yoke of oxen to draw these plows, and the sod, when turned, was so tough and leathery that it was necessary to let it lie and rot for a season before any ordinary crop could be grown on it.

After the prairie sod had decomposed, a new difficulty arose. Moldboards of wood, iron and other materials available in the early settlements would not scour. After the soil had been worked a few seasons it was found impossible to plow it. The ingenuity and resources of the local blacksmiths were called upon in vain. The soil, although so light that a wooden plow might penetrate it, would stick and ball up on any material tried as a moldboard.

The honor of making the first plow with a steel moldboard has been claimed for several men, but the first to make a steel plow and follow up the achievement by establishing the business of manufacturing plows was the late John Deere of Moline, Ill. Mr. Deere was a young blacksmith who came from Vermont with his kit of tools and established a small shop at Grand de Tour, in Northern Illinois. In 1837 he made his first steel plow, using steel from old saws, backed with a wooden frame, to make his moldboard. The next year he made two more plows in the same manner, shaping his moldboards over a log to give them the proper curvature. In 1839 he built ten plows, and in 1840 he added a second anvil in his shop and turned out 40 plows. Mr. Deere had formed a partnership with Major Andrus of Grand de Tour, under the firm name of Andrus & Deere, who continued until 1847, when Mr. Deere sold his interest in the business to Major Andrus and removed to Moline.

The difficulty of obtaining steel was a very serious drawback in the development of plow manufacturing at this time. Farmers would come to the shop of Andrus & Deere from adjoining counties in search of plows that would scour their soil, and if none were on hand, they would wait for days until they could be made. The supply of old saws was soon exhausted, but Andrus & Deere and other firms that had started small plow shops throughout Illinois were able, after a few years, to obtain saw blanks in which the teeth had not been cut. As these blanks were 6 to 8 inches wide, two widths were sufficient to make a moldboard, using, of course, wood backing to support the thin plate of steel. Before removing to Moline Mr. Deere wrote to Naylor & Co. of New York, explaining the demand for plows, and inquiring if they could not obtain and supply to him heavier plates of cast steel, instead of the thin saw plates that had been used. Naylor & Co. replied that no such steel could be had in the United States, but they would send to England and have it rolled specially for his purpose, according to his specifications.

After Mr. Deere had located at Moline the first shipment of this steel arrived. Fifty plows were made of it and sent to different parts of the country to be tested, where the soil was known to be the most difficult to plow. The results were very satisfactory, and the sale of plows increased rapidly, until in 1850 the firm of Deere & Co. at Moline sold 1600 plows, the output increasing a few years later to 10,000 plows annually. Imported cast or German steel, as it was called, was adopted by all the plow manufacturers, and its use continued until American steel mills were able to enter the field.

William Parlin, also a blacksmith, began making steel plows at Canton, Ill., in 1842. Ten years later he was joined by Wm. J. Orendorff under the firm name of W. H. Parlin & Co., the business being incorporated in later years as the Parlin & Orendorff Company. This company have the oldest steel plow works in the West and are one of the three or four largest manufacturers of steel plows.

Major Andrus, after the dissolution of the partnership of Andrus & Deere at Grand de Tour, removed the business to Dixon, Ill., where it has since been conducted by the Grand Detour Plow Company. Furst & Bradley were also pioneers in the business, having begun making steel plows in Chicago in 1853. This firm established the business now incorporated under the name of the David Bradley Mfg. Company, whose factory was removed a few years since to Bradley, Ill., about 56 miles from Chicago. The Moline Plow Company, although one of the largest concerns, was not established until 1866, but this company distinguished themselves by introducing the first three-wheel riding plow, which is now the prevailing type of plow used by progressive farmers. The Sattley Mfg. Company of Springfield, Ill., the Rock Island Plow Company of Rock Island, Ill., the Morrison Mfg. Company of Fort Madison, Iowa, and a number of other companies that now do a large business were established during the early years of the steel plow industry, so that the field of competition has been pretty well divided among some 20 or more prominent concerns, each of whom have distinguishing features in their line of goods to command the attention and good will of the farmers.

The German or cast steel that was introduced about 1850 in plow moldboards proved satisfactory at first, but under repeated cultivation and working the soil became more difficult to plow. The plow makers had a great deal of trouble adjusting complaints from sections where their plows would not scour, and the attention of inventors and steel experts was directed to the problem of improvements in moldboards. There was limit to the temper that could be given to a moldboard of solid crucible steel, because a plow is subjected to severe usage in the field. The steel could be tempered high enough to scour, but would then break too easily. In 1862 William Morrison patented a moldboard that combined toughness and high temper, but it was too difficult to manufacture and did not come into general use. He used a moldboard of two plates, the front or wearing plate being of cast steel, which was backed by a plate of soft iron, the two being welded together. As the iron and steel would not expand and contract together in heating and tempering, the moldboard would warp out of the proper curva-

ture, which must be preserved with great care or the plow will not clear the soil.

In 1868 John Lane, a practical plow maker, who was then superintendent for the firm of Hapgood, Young & Co. of Chicago, invented a moldboard that met with instant success. It was a composite plate, consisting of a middle plate of soft iron, and front and back plates of crucible steel, the three plates being welded and rolled out so as to make a solid moldboard. As the steel plates on the front and back would balance each other in heating and tempering, a moldboard could be given the highest temper without losing its shape, and the soft plate in the center made it tough enough to stand the hardest usage. Singer, Nimick & Co. of Pittsburgh made the first moldboards of this type, on Mr. Lane's specifications, but other steel makers became interested in the process, and in a few years "soft center" steel was adopted by all the plow manufacturers. In later years the steel makers substituted a plate of mild steel for the iron center that was specified in Mr. Lane's patent, but the principle, of course, remains the same, and moldboards of this type are now used almost universally in the plows sold in the prairie States. Some of the steel mills paid Mr. Lane a royalty of $1 a ton during the life of his patent. Others, although profiting by his invention, refused to recognize his claims, and when suit was brought against them the inventor was defeated on a technicality, the courts holding that his patent was on an improvement in the art of plow making, and that the steel mills were not engaged in making plows.

American steel plows, fitted with soft center steel moldboards, represent the highest attainment of the art of plow making. The hard tempered wearing parts, in ordinary soil, will last for years. The curvature of the moldboard has been determined by 50 years of practical plow building rather than by theoretical calculation, different curvatures being employed for sod and for stubble plows, and special moldboards with longer, easier curves for exceptionally difficult soil, such as the "black waxy" lands of Texas. As a result of careful observations in field tests, the general design has been so perfected that in ordinary soil a plow will turn a true furrow without the driver touching his hands to the handles. A noticeable result of this perfect construction is that American plows have short convenient handles, which give a neat appearance, as compared with the awkward, ungainly effect of the long handles that are considered necessary on the popular types of European plows.

Our farmers, however, have not rested content with a perfect walking plow. They have demanded that the plow should be placed on wheels, so that the operator could ride on a comfortable spring seat, and for the past 30 years the attention of inventors and manufacturers has been directed to meeting this demand. From 1850 to 1875 many patents were granted on "sulky" or gang plows, having two supporting wheels, and the art gradually developed until a considerable number were sold by different manufacturers, sufficient to demonstrate the future possibilities of this line of invention. Sixteen inventors or manufacturers competed at a field trial held at St. Louis in 1873, but it was not until the large manufacturers became actively interested that the trade assumed large proportions.

Two riding plows of the two-wheeled or "sulky" type became famous and are recognized by plow men as the "pioneers," the Gilpin plow, made by Deere & Co. and patented in 1875 by Gilpin Moore, their chief inventor, and the Casaday plow, patented by W. L. Casaday of South Bend, Ind., and introduced and sold on a large scale by the Oliver Chilled Plow Works. The Gilpin plow had a regular "bottom" with a straight land side similar to that of a walking plow, the short curved beam being suspended from the axle or frame, which was carried on two wheels, one running in the furrow and the other on the "land." This plow enabled the driver to ride on a comfortable seat without adding materially to the draft, but required straight driving to keep the furrow of even width. The Casaday was of a radically different type. The "bottom" was constructed without a land side, and was held against the turning furrow by the action of the furrow wheel, which was set at an angle, leaning out at the top and in at the bottom, in such a manner that this wheel ran against the edge of the land at all times and carried the side pressure of the plow. The land wheel was straight, like the wheels of other sulkies, this one sided construction giving the plow a very awkward appearance, which, however, did not interfere with its practical success. Other plow manufacturers entered the field about this time, and the "sulky" type of plow had a very large run, single factories making as high as 25,000 annually.

In 1884 the Moline Plow Company introduced a new type of plow, with three carrying wheels, which in a few years superseded all the types of sulkies. This plow, which was appropriately named the "Flying Dutchman," had one vertical wheel which ran on the land, and two wheels which ran in the furrow, one running in the forward or old furrow, opposite or a little in front of the moldboard, and the other running in the new furrow behind the plow, almost in line with the land side. This construction had the great advantage of cutting a furrow of even width, and of relieving the furrow friction to some extent by carrying on the frame of the plow the downward strain of the turning furrow, which, in a walking plow, tends to press the land side down into the subsoil. All the large plow manufacturers within a few years adopted this three-wheeled construction, which is now the standard type of riding plow.

About ten years ago the Sattley Mfg. Company introduced a notable improvement, the high spring lift. The beam of the plow is suspended on two bails in such a manner that the plow can be raised out of or lowered into the ground without raising or lowering the frame on the wheels. This movement is made very easily by a lever, with the aid of a powerful spring. The frame of the plow can also be raised or lowered, or leveled, by means of levers, to adjust the depth at which the plow will run. This construction has since been adopted by nearly all the leading manufacturers, and it has also been applied with great success to "gang" plows, which are now coming into general use.

The net result of all these great improvements in plow making has been to relieve the man of manual labor, and to give him a spring seat on which he can ride in comfort, with the minimum of physical exertion in managing and adjusting his plow. This has been the chief object of all modern improvements in agricultural implements—to transfer the labor of the field from the man to the horse. Severe manual labor has been practically eliminated from modern agriculture, and at the same time the acreage that a man can cultivate has been largely increased.

A report from the German Consul-General at Yokohama states that the German merchants of Yokohama and Tokyo have formed an association for the purpose of promoting German commercial interests in Japan. The association will also act in conjunction with similar German bodies in Eastern Asia and keep in touch with the East Asiatic Association of Hamburg. This new association has taken steps for the publication of a weekly newspaper in German. The German firms in Japan have guaranteed an annual amount of $3000 for a period of three years.

A Milwaukee daily last week noted the shipment by the Allis works of the Allis-Chalmers Company of 13 carloads of machinery for the New South Wales Government, to be used on its street railway at Sidney, Australia. This machinery, which weighed 125 tons, was all made, practically, since the strike of May 20 at the Allis shops in that city. The company also shipped to various places during the week six carloads of mining and other machinery, recently turned out in the same shops.

The *Commercial and Financial Chronicle* shows the aggregate gross earnings of railroads in the first half of 1901 to be $658,411,827, an increase of $61,580,231 over the first half of 1900, of about $164,000,000 over three years ago and $267,000,000 over six years ago.

The Collapse of the Machinists' Strike.

From all sections of the country come reports showing that the strike of the union machinists has utterly collapsed, there being only a few localities where there is even a pretense of a continuance of it.

We understand that the Strike and Finance Committee of the National Metal Trades Association will forward to the chairman of each district a letter requesting information as to which of the members of the association in his district are in need of men and who desire the national association to take steps to procure them.

Cincinnati.

CINCINNATI, OHIO, July 16, 1901.—(*By Telegraph.*)—So far as the general situation is concerned the strike is practically over in Cincinnati. While some of the men are still holding out for their forlorn hope, the great majority of them have come back to work without any concessions whatever being granted. Only three shops remain in which the strikers are refusing to return. These are shops of the Laidlaw-Dunn-Gordon Company, the I. & E. Greenwald Company and the Cincinnati Shaper Company. In view of the general situation, however, the managers of these shops are confident that they will be running in a very short time.

One sad incident connected with the strike was brought to light to-day by the arrest of George Snyder, a machinist in the employ of the W. E. Gang Company on Queen City avenue. The shop was set on fire on the morning of the 9th inst. Suspicion pointed to Snyder, and upon being arrested and charged with the crime he confessed and gave as his excuse that he dreaded being called a scab by the strikers to such an extent that he thought if the shop was to burn down he would have a good excuse for quitting work without giving offense either to his employers or the strikers.

The case of the injunction against the strikers came up in the United States Court before Judge Clark this morning. A portion of the argument was heard and the case went over for another week without decision, but in commenting on the situation the judge expressed himself in unmistakable terms against the practice of picketing, and advised the arrest and prosecution of any men who were engaged in that practice.

Milwaukee and Chicago.

CHICAGO, ILL., July 16, 1901.—(*By Telegraph.*)—The machinists' strike in Milwaukee is so nearly over that manufacturers are quite confident that one more week will see the end of it. The Allis Works now have over 75 per cent. of the men they need, and are receiving from 25 to 35 new men every day. They took in 35 this morning. The Filer & Stowell Company are also receiving many additions to their force, and expect their shops to be filled by the end of the week. Reports from other Milwaukee shops are of a similar character.

The situation in Chicago is unchanged; both sides are waiting to see the result in Milwaukee. The situation has also been complicated by the expectations of a molders' strike, which has now taken place. The manufacturers, with the exception of four or five who for special reasons must continue to run, will resist the demand of the molders, believing that the strike will not last long, owing to the fact that the strikers will not have the support of their national organization.

Newark, N. J.

On Monday morning the striking machinists of the Hewes & Phillips Iron Works and the Watts-Campbell Company returned to work voluntarily, having obtained no concession whatever. This was considered the death knell to the strike in Newark, as a number of strikers employed in several of the smaller shops returned to work as soon as they heard of it. There is but one shop of importance in this vicinity where the men are still holding out. This is at the Marine Engine & Machine Company of Harrison, where upward of 100 men are employed. It is very likely that these men will return within a few days, as they have previously shown a disposition to give up the struggle, but were held out by promises of the union agitators which have not been kept. Almost all of the striking machinists of the Atha Steel Company of Harrison have returned to work.

Bridgeport Strike Collapsed.

We have received the following from a Bridgeport correspondent who is absolutely reliable and who is intimately acquainted with the entire situation in that city: "This is simply to advise you that the machinists' strike in Bridgeport has collapsed after the men had been out eight weeks. At this writing all the shops in the city have as many of their old men back as are wanted. No concessions whatever have been granted by a single concern, and the strike is a complete failure, so far as the men are concerned."

At San Francisco.

SAN FRANCISCO, CAL., July 8, 1901.—The machinists' strike continues without either side appearing to be any nearer giving way than they were at the beginning. Still, progress is being made toward the inevitable end, and that is the triumph of the employers in the stand they have taken. The Union Iron Works have now 800 men employed, machinists and all, and the Risdon Iron Works 500, altogether, and, being very conservative, at least one-third of the men needed are at work. Strikers are returning to the shops every day—a few days ago 25 machinists came back to the Union Iron Works. There are breaks in the line, and it is only a question of time when most will be seeking cover. The Risdon Iron works have supplied themselves with 25 molders from the East—the institution has no further use for those who went out. This I have on most reliable authority. It has been recently reported that a train load of Eastern workmen were being imported. That, of course, was a fiction, but a large number have been brought on, and it is said that more are coming—some of them Eastern strikers. Work has been resumed, at least to some extent, all along the line, and it is no longer necessary to lay up a vessel for want of repairs, as in the case of the "Zealandia," which could not get needed repairs done either here or at Honolulu. Some of the local managers of the strike are threatening. They claim that business will be driven away from San Francisco and industries destroyed. Indeed, some think that something more solid than the interest of labor animates those who manage the strike. Their half veiled threats make people think so.

The Farrel Foundry & Machine Company, at Ansonia, Conn., obtained an effective injunction against 210 of their striking ex-employees. In the injunction each employee was specifically named, and an attachment in the sum of $25,000 was levied against the property of the defendant workmen, to guard against any loss on the part of the company should the injunction be disregarded in any way by the strikers.

At the works of Williams, White & Co. of Moline, Ill., the men, according to the latest advices, were still holding out.

A Statement by the Union Leader.

WASHINGTON, D. C., July 16, 1901.—The most important developments during the past week in the machinists' strike, as reported at the headquarters of the International Machinists' Association here, have been the total collapse of the movement among the employees of the Newport News Ship Building & Dry Dock Company, all of whom have returned to work; the return of more than 2000 men who have been on strike in Cincinnati and vicinity, and the announced determination of the officers of the Machinists' Association to devote their most vigorous efforts to making war on shops belonging to the National Metal Trades Association.

The strike at Newport News, which at one time involved 5000 men, as the company were obliged to close down certain departments for lack of machinists to bring the work forward, came to a sudden end on the 11th inst., when the strikers met and decided by a unanimous vote to return to work on the 15th inst. on the old terms as to hours and wages. Lack of funds with which to pay strike benefits and the ability of the company to secure skilled men were the reasons given by the employees for surrendering. Various reports are current as

to the efforts made by the men to obtain funds from the International Association to carry on the strike, and although it appears that the association agreed to furnish a certain amount of money, the men seemed to have been very doubtful that further funds would be forthcoming, and rather than increase their own financial difficulties they decided to return to work before other men could be brought to fill their places. At a meeting of the men a letter was addressed to General Superintendent Post asking him to allow the strikers to return to work on the old scale, and, in Mr. Post's absence, Acting Superintendent Hopkins agreed to take the old men back and to allow ten days for the return of those who might have left the city seeking work elsewhere.

The return to work of about 2000 striking machinists in Cincinnati practically at the old scales is claimed by the employers as a signal victory, but a somewhat ingenious explanation is offered by the officials of the Machinists' Association, who assert that the men who returned to work were employed by shops outside the Metal Trades' Association and were instructed to go back as a direct blow at the firms in the Metal Trades Association. It is claimed there are still 2000 men out in Cincinnati, practically all of whom were formerly employed in Metal Trades Association shops.

Another important incident of the week was the settlement of the strike in the shops of the Harlan & Hollingsworth Company of Wilmington, Del., where 110 machinists went back to work on the 15th inst. on the basis of a compromise under which men receiving $13 a week or more will have an advance of $1, and those receiving less an advance of 50 cents, the hours to be 56¼ during the Saturday half holiday season, and 60 during the rest of the year.

The attitude of the Machinists' Association toward the Metal Trades Association is clearly shown in the statements made by President O'Connell concerning the strike. To the correspondent of *The Iron Age* he said to-day:

"It is true that the strikers at Newport News have returned to work without securing any concessions, but the situation there was pecuniar. There was practically no other employment to be had by the strikers, and a great many of them were handicapped by the fact that they were buying homes from a land improvement company, which is really a part of the shipbuilding concern. The statement that our association did not send them any financial help is untrue, but it would have been almost impossible to overcome the obstacles in the way of a successful strike for the reasons I have stated.

"With regard to the so called surrender of the strikers in Cincinnati it should be understood that as a strategic move against the Cincinnati employers who are members of the National Metal Trades Association we decided to allow the men who were employed in shops not controlled by the association to return to work under the old conditions. No men will return to shops controlled by the National Metal Trades Association, either in Cincinnati or anywhere else. We are in the fight against this association in particular, and no compromise has been made with any of its members and none will be made.

"Now with regard to our reasons for making a special fight on the Metal Trades Association I want to say that we think we have been very unfairly treated by them. For more than a year the owners and managers of shops in the association have continually twitted us with the fact that while they had conceded us a shorter day we were making no efforts to compel their competitors outside the association to come to the same terms. Yet now the moment we inaugurate a strike to bring the outside concerns to the basis of our agreement with the Metal Trades Association these same gentlemen give their influence and support to these outside shops in resisting our demands. This is one of the reasons why we are fighting the association harder than anybody else. We are out to fight every shop that refuses our demands, members of the Metal Trades Association preferred."

Mr. O'Connell was asked whether in his opinion it would be possible, in view of the feeling of distrust which has arisen between the Metal Trades Association and the machinists, to bring about in the near future another arbitration agreement, to which he replied:

"I think that in spite of the bad blood stirred up by this episode the strike will soon terminate, and before long we will have a new agreement satisfactory to all parties and much less likely to be misunderstood in the future. The old agreement will never be renewed, but the man is not very far sighted who is unwilling to concede that the general tendency of labor troubles everywhere is toward settlement by arbitration. The great difficulty is to secure an agreement that will cover every possible contingency and that will be construed in exactly the same manner by both employers and men."

The Future of the English Cleveland District.

The *Iron and Coal Trades Review* prints the following letter from A. F. Pease of Darlington, a director in the famous firm of Pease & Partners, who have very large interests in the Durham coking coal field, own ore mines in the Cleveland district, and are also makers of pig iron in the Middlesbrough district:

In speeches and publications recently made on the future of the English iron and steel trades some authorities have made most pessimistic forecasts, if we have in the future to fight for our trade life with American competition represented by huge trusts; others have assumed that, it having been proved that good steel can be made from the native Cleveland ore, we in Cleveland, at least, have nothing to fear. This assumption is only true if we can have an unlimited supply of iron ore and other iron making minerals under physical conditions such as would enable these raw products to be raised and smelted cheaply. It seems, therefore, worth while to look more closely into the natural conditions we shall have to work under in the future.

First, let us take iron stone. We have in Cleveland an iron ore, the best of which does not contain more than 33 per cent. of iron (dried at 212 degrees). This may be roughly divided into two distinct qualities.

1. "Best" iron stone, which is worked from mines where the whole section of the main Cleveland iron stone seam is sent to the furnaces, and this stone will as a rule contain more than 29 per cent. of iron (dried at 212 degrees).

2. "Shale" iron stone, which is won from mines where the middle section of the seam contains so little iron and so much silica that it has to be cast back; and even after this has been done the remainder of the seam will not exceed 29 per cent. of iron, and in some cases considerably less.

The supply of the best iron stone in Cleveland is limited; probably there does not remain more than from 60,000,000 to 70,000,000 tons.

The supply of "shale" iron stone is unlimited, the quality getting gradually poorer in a southerly direction. During the year 1900 there were 20 mines working in Cleveland, of which 14 were working in best stone and six were working in shale, though the middle band had to be picked out in some districts of the mines included as working best stone. The output from the whole of the Cleveland mines was about 5,500,000 tons, of which about one-fifth would be won from the shale mines. If, therefore, we continue to exhaust the best mines at the present rate of rather more than 4,000,000 tons a year, their life will only be about 17 years. This is not what will take place in actual practice, as in a few years time, if it has not already begun, the output from the best mines will be reduced, and it will be many years longer before the last ton of best iron stone is worked.

Since the end of last year a number of furnaces have been blown out, and there has been a considerable reduction in the output of Cleveland ore, but I believe that nearly the whole of this reduction has fallen on the shale mines, and that the best iron stone mines are now working practically to their full economical capacity.

If the above facts are correct, the conclusion which

must be drawn is that for the long continuance, and for any extension, of the Cleveland iron trade, we must depend, as far as native ores are concerned, more and more on stone won from the shale mines.

It must be borne in mind, too, that at best we only have an ore of about 30 per cent. to deal with, whereas in America I understand no ore is worked with less than 50 per cent., a great part is over 60 per cent., and some is much higher than this.

Next let us consider the position with regard to coke. The quantity of coal remaining in the Durham coal field is enormous, but up to the present only a comparatively limited area has been found to contain coal suitable for making a hard, tough, dense coke, suitable for blast furnace purposes, and these qualities are becoming more and more important as the blast furnace practice improves with greater heats and increased blast. It is possible that means may be found for making a good coke out of the small from the household and gas coal collieries, but unless this can be done we must be dependent on the coking coal collieries. There are some coking collieries which have only recently been opened out, and will be able to work for many years chiefly, if not entirely, from the main coal seams, but we are already dependent for a part of our supplies of coke on collieries working only the thinner seams. There is sufficient coal in these to last for many years, but even in collieries where we are at present working partly from the main seams, we must become, as time goes on, gradually dependent on the thin seams. In considering the question of cost of the thin seams it has to be borne in mind that not only is the coal costly to hew, but also that it requires additional cleaning when brought to bank, and does not, as a rule, make quite as good coke after everything has been done to improve it as the thicker seams.

Limestone, the other chief material used for making iron, is available in vast quantities, and in various districts, so that it can be got for a very slight increase of railway dues or cost of working. We may, therefore, consider the supply unlimited. Let us, then, consider whether there will be a profit on making Cleveland iron, when No. 3 Cleveland pig iron is, say, 45 shillings 6 pence, out of iron stone won from a shale mine and coal from a colliery with only the thin seams left to work. In doing so we should endeavor to take average costs rather than exceptionally high or low ones.

Forty-five shillings 6 pence, the present market price, is considerably above the average of the ten years ending December 31, 1900, which was 42 shillings 4.18 pence, but still much below the prices that have been ruling quite recently.

If we make the assumption that Cleveland miners' wages are 21 per cent. above the standard, which, though there is no actual sliding scale in force, bears the same relationship to the price of pig iron as wages have done for some years, and that royalty rent is 3 pence per ton, we arrive at a cost of pig iron made under conditions as set forth above, as follows:

Cost of Iron Stone.

	Per ton. s.	d.
Say for every 4 tons brought to bank at a cost of 2s. 9d. per ton, 1 ton has to be thrown out, making the cost of the remaining 3 tons	3	8
Royalty rent	0	3
Cost of iron stone free in trucks at the mines	3	11

Cost of Coke.

Assuming that the pitmen's wages are 33 per cent. above the standard, and the royalty rent 3d., cost of coal 5s. 6d., yield of coke per ton of coal 60 per cent.		
Cost of coals per ton of coke	9	2
Cost of burning, including wages, repairs, &c	2	0
Cost of coke in trucks at the ovens	11	2

Cost of Weardale Limestone.

Including royalty rent 1½d, free in trucks at the quarries	1	7

If then these materials were delivered at the blast furnaces at Middlesbrough at cost price we should have the following estimate of the cost of making a ton of pig iron:

	Per ton. s.	d.	£	s.	d.
3½ tons iron stone (27 to 28 per cent. iron), at	3	11			
Dues to Middlesbrough	1	3			
	5	2	0	18	1
24 cwts. coke	11	2			
Dues to Middlesbrough	2	3			
	13	5	0	16	1.20
2-3 ton limestone	1	7			
Dues to Middlesbrough	2	3			
	3	10	0	2	6.66
Coals			0	1	0
			1	17	8.86
Furnace wages, charges, salaries, repairs &c			0	7	0
			£2	4	8.86

If No. 3 Cleveland iron were 45 shillings 6 pence, the average price realized for all qualities would be less rather than more than 44 shillings 6 pence. We should, therefore, have a loss per ton of 2.86 pence, and this without allowing for any interest on capital, depreciation of plant, or for the sundry obligations as regards subscriptions, &c., which devolve on the coal owner, mine owner and blast furnace owner.

This is the situation which I believe we in Cleveland very shortly have to face, if we intend not even to extend but merely maintain our present production from English ore. If my figures are not exaggerated, and I think on the whole they err on the low side, it means that in some way or other we must make great economies in production if the trade is to be continued. It seems possible that there may be considerable economies in the manufacture of coke and some economies at the blast furnace, but there is little scope for further economy in the winning of Cleveland iron stone so far as improved processes go. These improvements will, however, entail large capital expenditure, and there will have to be considerable further economies in addition to anything that we can hope to save by improved methods.

If the above figures are correct the profits of the coal owner, mine owner and blast furnace owner cannot be reduced, for they are already nil where and when the above conditions exist.

Either therefore the price of Cleveland iron must in future average more than 44 shillings 6 pence, or the Cleveland iron trade must gradually die out, or large reductions must be effected in royalty rent, railway dues and wages of the men.

My own view is that Durham and Cleveland will for many years continue to be large iron producing districts, but they will become more and more dependent on foreign ore. At the present time the price of 50 per cent. ore is about 15 shillings 6 pence at Middlesbrough, and it is possible to make hematite iron at a cost of about 10 shillings more than Cleveland, but the profits on good mines abroad have been simply enormous, and will still admit of a good return on capital invested even with large reductions. Other foreign fields are likely in the near future to be developed, and if proper appliances and American methods of transport are adopted, it should be possible profitably to deliver ore in this country at very much lower prices than the present, or, in other words, while we in Cleveland have to anticipate a constant increase in the cost of making Cleveland pig iron as the better and nearer stone in this district becomes exhausted, the cost of making iron from foreign ore when the resources of various countries are more fully developed ought to allow of large reductions in the price. Some of the shale mines now opened out, where all the circumstances are favorable, may continue for some years to be worked without loss, but looking at the matter broadly I cannot see that there is any chance of the shale iron stone field of Cleveland being profitably developed.

The strike at the tube mill of the Reading Iron Company, at Reading, Pa., is over.

MANUFACTURING.

Iron and Steel.

At the bi-monthly wage conference, held at Youngstown, Ohio, last week, between representatives of the Amalgamated Association and James H. Nutt, labor representative of the Republic Iron & Steel Company, it was found that the average prices of shipments of bar iron by the Valley mills in May and June entitle the men to an advance in wages for July and August. Wages of puddlers will be increased from $4.87½ a ton to $5.25 a ton, and heating and rolling from 62.4 cents per ton to 65.7 cents per ton.

The additional tin mills being erected at the Laughlin Works of the American Tin Plate Company, at Martin's Ferry, Ohio, are about finished, and this entire plant, which now embraces 32 tin mills, will be in full operation in the latter part of this month. It is claimed that this plant, in point of equipment and economy of operation, is the finest tin plate works owned by the American Tin Plate Company.

The Sharon Steel Company of Sharon, Pa., state that the matter of building another blast furnace and four more open hearth furnaces has been seriously discussed, but has not been fully decided upon.

The American Car & Foundry Company, St. Louis, Mo., have leased the plant of the Milton Iron Works, at Williamsport, Pa.

The Reading Iron Company have decided to rebuild their rolling mill department at Danville, Pa., which was recently destroyed by fire. The mill is to cost about $100,000.

The Crucible Steel Company of America of Pittsburgh are having some cars built at the works of the Youngstown Car Company, Youngstown, Ohio.

The Hammond Rolling Mill Company, operating a merchant bar mill at Hammond, Ind., have gone into liquidation and the affairs of the company are now being wound up. It is claimed that arrangements to hold the property are being made by the leading capitalists interested and that a reorganization will shortly be accomplished, after which the works will be remodeled and enlarged for the purpose of greatly increasing the output.

At a recent meeting of the stockholders of the Salem Iron Company, held at Salem, Ohio, several propositions to increase the capital stock were considered, but none adopted. The present capitalization is $250,000, and owing to recent improvements this capitalization will be practically doubled. The company operate Grafton Furnace, at Leetonia, Ohio. B. Miller of Cleveland is president, and M. J. McKeefrey of Leetonia, Ohio, secretary.

Work on Furnace No. 2 of the National Steel Company at Mingo Junction, Ohio, is progressing rapidly and the furnace will be put into blast about August 15.

The Ohio Falls Iron Company of New Albany, Ind., will make a number of improvements in their plant at Jeffersonville. New boilers are to be placed over the heating furnaces in the bar mill, new timbers will be placed under the main engines and new squeezers are to be installed. The cost of the improvements will be from $15,000 to $20,000, and will make the plant one of the most complete of its kind in the country. The mills will be placed in operation in August.

The improvements which the American Iron & Steel Mfg. Company are making at their plant at Lebanon, Pa., include additions to the galvanizing, threading, pattern and forging shops, and new cooper and oil buildings.

The Hartman Mfg. Company of Ellwood City, Pa., have recently purchased a 250 horse-power engine and two 150 horse-power boilers, to be set up in their new wire nail plant. This concern will manufacture all sizes of wire nails, from 3d. fine up to 60d. as soon as they are fully equipped. At present they are making 3d., 6d. and 8d., but expect to be able to supply all sizes by September 1 next.

The puddlers employed by the American Iron & Steel Company, Lebanon, Pa., will be paid $3.75 per ton after July 15. The new rate is an increase of 25 cents a ton.

Puddlers of the E. & G. Brooke Iron Company, at Birdsboro, Pa., have been granted a wage increase to $4 a ton, beginning July 15.

General Machinery.

The Youngstown Foundry & Machine Company, Youngstown, Ohio, contemplate making some large additions to their plant. For this purpose a meeting of stockholders will be held on July 16, at which time the capital stock will likely be increased from $50,000 to $75,000, to provide funds for these additions. The business of the Youngstown Foundry & Machine Company in the manufacture of rolls and rolling mill machinery of all kinds are growing steadily and the firm have made some large additions to their plant since the initial works were started. It is found imperative, however, to again increase the capacity, in order to keep up with their business.

The Lloyd Booth Company of Youngstown, Ohio, are sending out notices to the trade to the effect that their firm have become members of the United Engineering & Foundry Company, and will hereafter be known as the Lloyd Booth department of that concern. All contracts made by the Lloyd Booth Company which were unfilled on July 1 will be assumed by the United Engineering & Foundry Company.

The Clyde Iron Works is the new title which the North-Western Mfg. Company of Duluth, Minn., have adopted because of the confusion which has resulted from the similarity of the old corporate name to that of others in that vicinity. The capital stock has been increased from $20,000 to $100,000. They have purchased the plants of the Northwestern Supply Company and the Clyde Iron Company, at 302 to 308 Lake avenue, South, and will conduct, in addition to their logging tool business, the foundry and machine shop formerly operated by these companies. The shop will be refitted and equipped with the most modern appliances.

The plans of the B. F. Sturtevant Company, so far as perfected, for their new plant at Hyde Park, Mass., contemplate an engine and electrical shop of gallery type, 120 x 400 feet, two buildings each 80 x 400 feet and three stories high, for blowers, heaters, forges, galvanized iron work, exhaust heads, &c., and a foundry 120 x 400 feet. In addition, independent office, power and pattern storage buildings are planned for. Fire proof or slow burning construction will be the rule throughout.

The National Machine Company, Hartford, Conn., manufacturers of printing, stamping, embossing and cutting and creasing presses, special machinery, &c., have increased their capital stock from $25,000 to $36,000.

A. L. Derry & Co., Scranton, Pa., railway equipment and machinery, iron and steel, recently incorporated, expect in the near future to erect machine shops and warehouse for general and special kinds of work. The officers are Samuel T. York, president; Chas. L. Hawley, vice-president, and A. L. Derry, secretary and treasurer.

The Schacht Mfg. Company, Cincinnati, Ohio, manufacturers of high grade machinery specialties, have increased their capital stock from $30,000 to $100,000.

Thomas J. Alcott, proprietor of the firm of T. C. Alcott & Sons, hydraulic and mechanical engineers, founders, machinists and manufacturers of the High Duty turbine, at Mount Holly, N. J., has purchased the foundry, machine shop, &c., of the J. W. Taylor Mfg. Company in that city, better known as the plant of T. H. Risdon & Co., manufacturers of water wheels and general machinery. The present intention of the new owner is to operate both plants extensively in the manufacture of turbines, &c.

The Youngstown Engineering Company, who are building a plant at Youngstown, Ohio, are making good progress, and the Youngstown works of the American Bridge Company, who are putting up the buildings, have about finished their work. Machinery is being received, and the company expect to be in operation about August 15 next.

Recently the Stilwell-Bierce & Smith-Valle Company of Dayton, Ohio, shipped feed water heaters to the J. J. Snider Lumber Company, Columbus, Ohio; Briggs Machinery & Supply Company, Dallas, Texas; William Focke's Sons, Dayton, Ohio; the Warren Electric & Specialty Company, Manown, Iowa. The company also recently shipped to the North Carolina Electrical Power Company, at Marshall, N. C., one of their 27-inch improved cylinder gate Victor turbines mounted on a horizontal shaft in a wrought iron flume. The wheel was made entirely of bronze and under 600 feet working head of water will develop 750 horse-power. This power will be used for driving the plant of one of the street railway companies in Asheville, N. C. The shipment also included 70 feet of steel feeder pipe, three sets of head gate irons and the necessary water rack.

Suit has been brought by the Westinghouse Electric & Mfg. Company against the Lorain Steel Company and H. C. Evans, an agent in New York City. It is for an alleged infringement of a patent for an electric motor controller, the instrument used to turn on the power on a trolley car. The Lorain Company are controlled by the Federal Steel Company, who are one of the concerns in the United States Steel Corporation. The suit is brought by the General Electric Company, as well as by the Westinghouse. The plaintiffs ask an injunction restraining the defendants from making dynamo electric machines invented by Norman W. Storer in 1892. They state that he assigned his patents to the Westinghouse Company in 1896. An accounting is also asked to compel the defendants to pay to the Westinghouse Company the amount of loss sustained by the latter through the sale of the machines.

The Weatherly Foundry & Machine Company have recently enlarged their plant at Weatherly, Pa., by a 75-foot addition. The company advise us that they have a large amount of work on hand and will probably find it necessary to still further increase their plant with a corresponding increase in hands employed.

The Pittsburgh Shear, Knife & Machine Company of Pittsburgh, builders of solid steel shear knives, forgings, steam hammers and special machinery, are building an addition to their works 44 x 100 feet in size, to be used as an erecting shop. A Morgan electric traveling crane of 20 tons capacity, with an auxiliary hoist, will be installed.

The Hydraulic Machine Company, with offices in the Lewis Block, Pittsburgh, and whose large works are located at Fifty-fourth street and Allegheny Valley Railway, have recently

bought a large lot of ground adjacent to their works, which will be utilized for the building of extensive additions to their plant. Work for the new buildings will be started in a short time.

The Penobscot Machinery Company, dealers in engines, boilers and machinery, at 104 Franklin street, Bangor, Maine, recently incorporated, have secured a new plant and are now equipping it with new and up to date tools and machinery for general machine work. As soon as possible they expect to add a foundry. The officers are Rodney C. Penney, president, and L. E. Levenselier, treasurer.

Engines and Boilers.

M. Forrest Loomis and Milton Bech, formerly designers with the Olds Motor Works, Detroit, Mich., have with some leading capitalists of Saginaw, Mich., organized a company in that city for the manufacture of heavy gas engines, to be run by producer gas, for electric light, railway and power transmission. The company will also do general engineering work. The old railway power house on Tilden street has been secured and will be occupied by the new concern as soon as the company are incorporated and the minor details as to the force and equipment of the plant are settled.

Union Iron Works, Erie, Pa., manufacturers of steel boilers, have let the contract for a new addition, 70 x 125 feet, to their present shop. They have also contracted with the Morgan Engineering Company of Alliance, Ohio, for an additional hydraulic riveter, 100 tons capacity, 12-foot stake, which with the large 60-inch Hilles & Jones punch recently purchased, will practically double the output of the plant.

As the result of the refusal of a number of creditors of the McNeil Boiler Company of Akron, Ohio, to accept less than 100 per cent. for the settlement of their claims, the plant is to be offered for sale by the court, and will be sold to the highest bidder. Of the creditors, 65 per cent. were willing to settle on 80 per cent. basis and were willing to permit the recognition of the company. The refusal of the others to accept less than 100 per cent. in settlement of their claims has resulted in the sale of orders. The plant has been operated by J. B. Campbell, receiver, for some time.

W. S. Kernohan of Youngstown, Ohio, with others, has acquired possession of the plant of the Union Boiler Works, at Girard, Ohio. Subscriptions to the stock of the company are being taken and it is intended to place the business of the concern on a paying basis. C. B. Sill of Warren, Ohio, will be manager of the plant.

William B. Pollock & Co., whose boiler and heavy plate iron works at Youngstown, Ohio, were recently burned down, will rush work as fast as possible on their new plant, which will be built on the old Himrod Furnace ground, located just outside of Youngstown. A contract has been given to the American Bridge Company for the steel buildings for the new works, and the material will be turned out at the Youngstown works. The main building is to be 100 x 270 feet, and there will be a number of small buildings. It is intended to make this one of the most complete boiler and heavy sheet iron works, in point of construction and equipment, that has ever been built. A large number of heavy iron working tools and other modern equipment will be installed and the capacity of the new works will be very much larger than that of the old plant.

The Mexican Central Railroad has placed an order for four 6-wheel switching engines with the Pittsburgh Locomotive Works of Pittsburgh, and the road has asked for bids for four more switching engines and four consolidated engines. It is expected that all these engines will be built in Pittsburgh.

The Lima Locomotive & Machine Company, Lima, Ohio, have under consideration a plan whereby the Market and Jackson street plant will be combined with the South Side plant at the latter works, where there are ample railroad facilities. It is the intention of the company to practically rebuild the South Side plant and equip it with the most modern appliances. The capacity will be doubled and the buildings erected with a view of greater increase in the near future.

Edw'd Kendall & Sons, boiler manufacturers, Cambridgeport, Mass., have plans prepared for a new building, 118 x 241 feet, one story, of brick and steel construction.

On Monday, July 15, the boiler works of the Reeves Brothers Company, at Niles, Ohio, were completely destroyed by fire. In May of last year this plant was burned down.

Buildings and Bridges.

Fire at the works of the New England Structural Company, at Everett, Mass., destroyed the buildings devoted to the ornamental iron and architectural works and the power plant. The loss is estimated at about $30,000. The bridge and structural steel shops were not damaged and are now in operation, the company having obtained electrical power from an outside station. Their entire plant was operated by the separate motor system, and thus though their power plant was destroyed they are able to operate in the undamaged departments.

Foundries.

The Whitney Car Wheel Company, recently incorporated under the laws of New Jersey, have purchased six acres of land fronting on Haddon and Ferry avenues and the Camden & Atlantic City Railroad, Camden, N. J., upon which they will erect a large modern car wheel manufacturing plant. George Plowman, Betz Building, Philadelphia, Pa., architect and engineer, has been engaged to prepare plans and supervise the construction of the buildings and the installation of the machinery. The drawings for the buildings are nearly finished. They provide for a foundry 150 x 150 feet; an engine, boiler and dynamo room, 90 x 80 feet; a two-story machine and pattern shop, 100 x 70 feet, and a two-story office 40 feet square, all of which will be of brick and will have slate roofs. They will cost, exclusive of the machinery, about $150,000, and estimates for their construction will shortly be invited. Besides these, other buildings will be erected from time to time, as it is the intention of the company to cover the entire tract with buildings eventually and the plans have been drawn with this end in view. The officers and incorporators of the company are Asa W. Whitney, president; Joseph L. Dailey, vice-president; T. Fernley Brooks, secretary; Joseph P. Mumford, treasurer; James S. Whitney, William S. Darnell and W. B. Smith.

Joseph Hill of Hill & Bosley, iron founders, Winchendon, Mass., has purchased the old mill site on Mechanic street, upon which he will erect in the near future a machine shop and foundry.

A large portion of the real estate of the Phenix Iron Foundry at Providence, R. I., has been sold by the receiver, Harold J. Gross, to the Narragansett Electric Lighting Company. The property sold includes only the land and shell of the building on it, the machinery and tools still remaining the property of the Phenix Company. With the money received from this sale all debts will be paid in full. It is probable that the company will be reorganized, the roll shop removed to the Elm street plant, which they still own, and other property acquired for foundry purposes or the castings made by contract. The shops are now running on full time.

The D. Wilcox Mfg. Company, Mechanicsburg, Pa., manufacturers of fifth wheels, special drop forgings, &c., are erecting a brick and iron building, 140 x 40 feet, for the finishing department, also stock shipping department, and are adding new machinery to facilitate the getting out of work promptly.

The Andrew Terry Company, manufacturers of malleable iron castings, at Terryville, Conn., will build an addition, 130 x 60 feet, to the east foundry.

J. A. Ridgwell and A. J. Hall, under the name of the Norfolk Foundry, Ridgwell & Hall, proprietors, have opened an iron and brass foundry at Madison and Water streets, Norfolk, Va. The building has been equipped with the usual modern appliances for the manufacture of castings, and on the second floor has been fitted up a room where patterns of every kind can be made at short notice.

Hardware.

The manufacturers of steel wheels for farm wagons, log carts, &c., have been very busy this season with export orders. The Electric Wheel Company, Quincy, Ill., have just shipped a car load of these wheels to the Sandwich Islands and have also furnished quite a number of them for work in South Africa. The steel wheel is not only more durable than the wooden wheel in hot climates, but it is also free from the ticks or insects which oftentimes destroy the wooden wheels. These wheels are also used extensively in the United States for farm work. They are made of any size, with any width of tire and to fit any axle, and are beginning to be considered as indispensable around the farm as a plow or a cultivator. They are also used throughout the mines and lumber camps, a special wheel being built for mining work and also for log hauling.

The Western Stamping & Enameling Company have been incorporated by W. H. Sweeney, W. K. Gore and others, with a capital stock of $100,000, to operate the enameling works at Dubuque, Iowa. W. H. Sweeney will act as manager.

A. A. Hirsch, G. F. Borman and T. J. McGrath have applied for an Illinois license to incorporate the Continental Wire Fence Company of Chicago, with a capital stock of $15,000.

The Smith & Egge Company, Bridgeport, Conn., and 62 Reade street, New York, have just received from a customer in New Plymouth, Taranaki, New Zealand, a letter together with photographs and a copy of the local paper, which indicate the effectiveness of their Yankee rat trap during the bubonic scare. The catch of rats at one setting was 25, the previous night 11, with a total of 82 in one week.

The T. C. Prouty Company of Midland, Mich., manufacturers of barn and parlor door hangers, have decided to remove to Albion, Mich. Albion business men subscribed for $45,000 of the capital stock of $100,000. The company will occupy the old Keenan & Hess Brass Mfg. Company plant and will start with 60 men, which they expect to increase to 100 in the near future.

Plans have been completed for a group of factory buildings for the Janesville Barb Wire Company, at Janesville, Wis. The enlarged plant will occupy about a block and will comprise several buildings, the largest one being 60 x 150 feet in size. The roof of this building will be carried by nine 60-foot trusses. The engines and boilers will be in a separate building, and the arrangements for handling materials will be as perfect as it is possible to make them.

Combination Fence Works, Council Bluffs, Iowa, have been succeeded by the R. H. Bloomer Mfg. Company, who were incorporated July 8, with a capital stock of $100,000. The officers of the new company are R. H. Bloomer, proprietor and manager of the Combination Fence Works for the past 16 years, president; R. W. Bloomer, vice-president; C. H. W. Brown, secretary, and F. W. Bolluff, treasurer. Owing to the material increase in the demand for their products, especially their new single strand staggered stay field fencing, the company are making preparations for enlarging their capacity. New buildings will be erected and improved machinery added so as to more than double the present capacity of the plant. The company will also give some attention to the marketing of their products abroad.

Miscellaneous.

A meeting of the directors of the Manufacturers' Light & Heat Company of Pittsburgh will be held September 10 to consider an increase in the capital stock of the company from $1,500,000 to $5,000,000. On the present capital dividends of 6 per cent. are paid. About two years ago the capital was increased from $600,000 to $1,500,000, the People's Light & Heat Company of Washington, Pa., and the Bellevue & Glenfield Natural Gas Company being absorbed. The prospective increase of capital is thought to mean the absorption of other natural gas companies.

The American Frog & Switch Company, Hamilton, Ohio, have broken ground for the new plant they are to erect at Edgewood. The main building will be 345 x 100 feet, with a power house 32 x 54 feet. The plant will be equipped with the most modern appliances throughout and will be put in full operation in the shortest time possible.

The New Process Raw Hide Company, Syracuse, N. Y., manufacturers of raw hide spur, bevel and friction gears, &c., have recently made a considerable addition to their plant, by installing a number of new machines, including three Gleason bevel gear planers, which plane the teeth of bevel gears accurately to cone lines, and one automatic spur gear cutter. The company now have facilities for making metal gears as well as the raw hide product.

The Day Automobile Company, 1407 East Twelfth street, Kansas City, Mo., have incorporated with a capital stock of $12,000 for the purpose of handling automobiles. They are the distributers for the Locomobile in the Southwest. Thos. W. Day is president and treasurer.

The Fred. J. Myers Mfg. Company, Hamilton, Ohio, manufacturers of wire goods, &c., have secured the contract for all of the wire work to be installed in the new city building of Covington, Ky., also for the elevator inclosures and other wire work for a new bank at Dallas, Texas, and for a new hotel at Norfolk, Va.; also all wire work for the West Washington Hospital for the Insane at Tacoma, Wash. The company are operating their plant to 11 o'clock every night in the effort to keep up with their orders.

The Iron City Engineering Company of Pittsburgh have been incorporated with a capitalization of $25,000. Charles W. Ridinger is president and Harry D. Hershey is secretary and treasurer. The incorporation succeed the partnership of Fessenden & Ridinger, contracting electrical engineers and manufacturers' agents.

The American Belting Company will erect a large works for the manufacture of belting at Youngstown, Ohio. The main building will be 70 x 135 feet and three stories high. It will contain boiler room, shipping department, machine shop, storage department, offices, &c. The stretching and dry house will be 35 x 620 feet.

The Ajax Motor Vehicle Company, Room 100, 32 Broadway, New York City, have organized with a cash capital of $10,000, for the manufacture of high class electric automobiles. It has not as yet been decided whether an existing plant will be acquired or new works built. The officers will be A. L. Simpson, president and general manager, and Walter Simpson, secretary and treasurer.

The Keystone Driller Company, Beaver Falls, Pa., have increased their capital stock from $150,000 to $300,000. This concern are now making an addition to their plant, which will be completed in about 30 days. It will increase their capacity for the manufacture of drilling machines and will allow them to make a larger machine for drilling to a depth of 2500 feet for water, oil or gas.

The Riter-Conley Mfg. Company.—The report that the Riter-Conley Mfg. Company of Pittsburgh, builders of iron and steel plate construction of all kinds, had bought a site of land on the Fort Wayne Railway, below Pittsburgh, for the purpose of building a new works is untrue. This concern have looked about at different times for a new site, but have not as yet bought any property. The temporary offices of the Riter-Conley Mfg. Company have been removed to 433 Liberty street, while their new three-story building on Water street, for offices and drafting rooms, is being erected.

The Mesta Machine Company.

The Mesta Machine Company of Pittsburgh, whose large works are at West Homestead, have recently taken heavy contracts for rolling mill engines. In addition to the five blowing engines for the two new blast furnaces of the Union Steel Company, at Donora, the Mesta Machine Company have built five pairs of horizontal cross compound blowing engines for the Illinois Steel Company. Some of these engines have already been shipped and are in service. The Mesta Machine Company have also received an order for vertical engines for the Lake Superior Power Company, who are building a large iron and steel plant at Sault Ste. Marie, and a pair of 46 x 60 inch reversing engines, with a 45-inch blooming mill, for the new open hearth steel plant and skelp mills of the La Belle Iron Works, at Steubenville, Ohio. This blooming mill will be one of the largest ever built, and is larger than the mill recently installed in the Duquesne Steel Works by the Carnegie Steel Company, which is only 40 inches in diameter. In this new mill the housings will weigh from 40 to 50 tons. The Mesta Machine Company have also a contract from the Colonial Steel Company, recently organized at Pittsburgh, and who will build a large crucible steel plant at Monessen, for three 30 x 60 inch horizontal Corliss engines, each with a 60-ton fly wheel.

The Mesta Machine Company recently transferred their ingot mold department at the West Homestead works to the American Ingot Mold Company, and the space formerly used has been given over to the enlarging of the engine department, and a number of heavy iron working tools have recently been installed. A contract recently filled by the Mesta Machine Company was for a universal slabbing mill with tables, &c., for the basic open hearth steel plant of the Conemaugh Steel Company, at Johnstown, Pa. The mill is 34-inch and is one of the most complete ever built. It has reversing tables and manipulator, and the mill proper is of steel castings throughout. The housings weigh 25 tons each, and are annealed steel castings. To anneal a casting of this size the Mesta Machine Company had to build a special large annealing furnace, which will be available for any future large annealing work which may be required.

The International Acheson Graphite Company.—The directors of the International Acheson Graphite Company have declared a 3½ per cent. dividend on the preferred stock, issued from the company's earnings of the current half year, payable August 1. The development of the business of the company has been rapid. E. G. Acheson, who recently retired from the presidency of the Carborundum Company, which company he organized, financed and managed for some eight or nine years, is also the patentee of the various methods and processes owned by the Graphite Company. He started the practical manufacture of graphite in 1897, and although the line of work was perfectly new and it was necessary to construct the market, their present year's business will approximate 1,000,000 pounds in graphite anodes and electrodes alone, while the consumption of pure graphites for paints, stove polish and other purposes is showing rapid strides. The product of this new Niagara industry of Mr. Acheson's, while not spectacular, as that of his earlier production, carborundum, is nevertheless regarded in a commercial sense as much more interesting and promising.

A Consolidation of Malleable Foundries.—A scheme is on foot to consolidate a large number of manufacturers of malleable iron castings. It is stated that the consolidation is planned to include practically all the malleable concerns in the West and some in the East.

At Pittsburgh an answer has been filed in the equity proceedings in the Weir Furnace Company against the Anshutz-Bradberry Company for an accounting of a patent appliance. The right to maintain the suit is denied, upon the ground that the plaintiff company does not possess an entire interest.

The Iron and Metal Trades.

So far as it has developed, the strike does not affect at all, geographically, the whole territory east of the Alleghany Mountains, nor does it influence any department or any locality in the South. It is confined exclusively to the Central West, and leaves untouched there two important groups of interests—first, those which operate nonunion mills, and, second, those union mills which have signed the scale. Among the former we have such plants as Cambria, Jones & Laughlins, Otis, and among the latter the extensive group of works of the Republic Iron & Steel Company and a large number of mills in the Pittsburgh, Cleveland, Indiana, Chicago districts, and in the Valleys.

Then further there are the great nonunion works of the United States Steel Corporation, like the Carnegie, the National Tube, the National Steel and the American Steel & Wire. The Illinois Steel Company may be classed by themselves as a partially union plant which might be crippled to some extent by having their union men called out.

In their present situation, with the works of the Tin Plate and Steel Hoop companies practically all idle and work suspended at the union Sheet mills, the different branches of the Iron industry are affected in the following manner:

There is not any trouble at any of the blast furnaces, nor is there likely to be, so that the production of Pig Iron will go on unaffected, certainly for some time to come.

The closing down of the rolling mills of course cuts off, to a considerable extent, temporarily and in some degree irrevocably the consumption of Forge, Bessemer and Basic Pig Iron or its equivalent in Steel. The greater part of the product of the idle rolling mills is made of Steel, of which nearly all is furnished by the Steel works belonging to the United States Steel Corporation. But little Muck Bar and Scrap is rolled into finished articles in the idle plants. In view of the great scarcity of Steel in recent months, it is probable that the Steel works will go on for some time, so that the consumption of Pig Iron, either produced by the controlled furnaces or furnished by outside makers, would continue unabated. The rolling mill strike will be welcome as relieving the scarcity of Steel and will but little affect the current consumption of Pig Iron. The requirements of the raw materials, Ore and Coke will continue practically unabated.

From the standpoint of the Pig Iron maker, just relieved of the trouble incident to the strike of the machinists, a far more serious matter, as affecting at least the Chicago market, is the perversity of the molders in the West, who are entering upon a fight of their own. As it is, the Foundry Pig Iron market has been wavering on the brink of a decline too long to receive this new blow with adequate fortitude.

Turning again to the rolling mill strike, we may note that very important branches are practically unaffected. This is true, first of all, of Steel Rails and of Track Material generally. It is true of the great Plate trade and of the whole Structural Iron trade. Nor does there appear to be any chance that the Tube and Pipe mills will stop, although some Skelp mills are now shut down. The whole great Wire industry will go on, since the mills are all nonunion.

If, however, the Amalgamated Association possesses the ability, as claimed, to order out the men in some of the other great plants of the United States Steel Corporation, and if that body uses such power, then the heavy trades referred to might suffer inconvenience.

The situation is probably most serious, so far as the consumer is concerned, in the Tin Plate industry, because the supply available from sources other than the American Tin Plate Company is limited indeed, and because even of that supply a very large share is controlled by consumers of the goods. Of course those manufacturers who depend upon foreign Plates for the export trade would be little affected, and if the outlook did take a serious turn Plates might even be imported.

In the Sheet trade there are quite a number of outside concerns in the West who have already signed the scale, and in the East, who are beyond the range of trouble. Then, too, some very important plants controlled by the American Sheet Steel Company are running full, being nonunion and not having been touched by the Amalgamated Association. But the outside quantities are relatively small, and the pressure on all the mills has been so heavy that any protracted strike would very seriously inconvenience important consuming industries. In the meantime the active mills are quoting the prices which ruled before the recent reduction announced by the American Sheet Steel Company.

In the Bar trade the situation is less grave. The East has considerable active capacity, and in the West the mills of the Republic Iron & Steel Company and the outside plants furnish a very large tonnage. In Steel Bars some of the other plants of the United States Steel Corporation might take care of the customers of the American Steel Hoop Company.

In the Cotton Tie trade, in which the principal producers are shut down, considerable tonnage is in the hands of merchants and distributers, so that serious embarrassment is a good way off.

Trade news during the week is not very important. Cincinnati reports some pretty large sales of Pig Iron, and some larger transactions have taken place in St. Louis and in Chicago. About 10,000 tons of Southern Forge Iron was also sold for delivery in the Pittsburgh district. It would seem that the air has been cleared by the selling by at least one interest in the Birmingham district on the basis of about $10 per ton for No. 2 Foundry.

In some quarters some good sales of Structural Material have been made, but on the whole the amount of new work coming up is rather below the average.

The Eastern Bar Iron manufacturers are now discussing the question of protecting the merchants who find it impossible to do business in this branch under present conditions.

In the metal trade Pig Tin is, of course, affected by the closing of the Tin Plate works.

A Comparison of Prices.

At date, one week, one month and one year previous.

Advances Over the Previous Month in Heavy Type. Declines in Italics.

	July 17, 1901.	July 10, 1901.	June 19, 1901.	July 19, 1900.
PIG IRON:				
Foundry Pig, No. 2, Standard, Philadelphia	*$14.75*	$14.75	$15.00	$15.50
Foundry Pig, No. 2, Southern, Cincinnati	*12.75*	12.75	13.25	16.50
Foundry Pig, No. 2, Local, Chicago	15.00	15.00	15.00	18.00
Bessemer Pig, Pittsburgh	16.00	16.00	16.00	17.00
Gray Forge, Pittsburgh	**13.50**	13.50	13.25	15.50
Lake Superior Charcoal, Chicago	17.00	17.00	17.00	22.00
BILLETS, RAILS, ETC.:				
Steel Billets, Pittsburgh (nom)	*24.00*	24.00	24.50	30.00
Steel Billets, Philadelphia (nom)	*26.50*	.....	26.75	32.50
Steel Billets, Chicago, (nom)	.....	.....	.....	.....
Wire Rods (delivered)	*36.00*	36.50	39.00	35.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	35.00
Spikes, Tidewater	1.80	1.80	1.80	2.15
Splice Bars, Tidewater	**1.50**	1.50	1.40	2.00
OLD MATERIAL:				
O. Steel Rails, Chicago, gross ton	13.00	12.50	13.00	9.50
O. Steel Rails, Philadelphia	**15.75**	.....	15.00	13.00
O. Iron Rails, Chicago, gross ton	18.50	18.50	18.50	12.50
O. Iron Rails, Philadelphia	19.00	.....	19.00	15.00
O. Car Wheels, Chicago, gross ton	16.50	16.50	16.50	18.00
O. Car Wheels, Philadelphia	17.50	.....	17.50	17.00
Heavy Steel Scrap, Chicago, g. ton	*12.50*	12.50	13.00	9.00
FINISHED IRON AND STEEL:				
Refined Iron Bars, Philadelphia	1.55	1.55	1.55	1.80
Common Iron Bars, Chicago	1.55	1.55	1.55	1.40
Common Iron Bars, Youngstown	1.45	1.40	1.45	1.35
Steel Bars, Tidewater	*1.60*	1.60	1.62½	1.40
Steel Bars, Pittsburgh	....	1.40	1.40	1.15
Tank Plates, Tidewater	1.75	1.75	1.75	1.80
Tank Plates, Pittsburgh	1.60	1.60	1.60	1.15
Beams, Tidewater	1.75	1.75	1.75	2.05
Beams, Pittsburgh	1.60	1.60	1.60	1.90
Angles, Tidewater	1.75	1.75	1.75	1.95
Angles, Pittsburgh	1.60	1.60	1.60	1.80
Skelp, Grooved Iron, Pittsburgh	**1.85**	1.82½	1.82½	1.25
Skelp, Sheared Iron, Pittsburgh	1.90	1.90	1.90	1.25
Sheets, No. 27, Pittsburgh	2.90	2.90	2.90	2.90
Barb Wire, f.o b. Pittsburgh	2.90	2.90	2.90	2.80
Wire Nails, f.o.b. Pittsburgh	2.80	2.80	2.80	2.20
Cut Nails, Mill	2.00	2.00	2.00	1.95
METALS:				
Copper, New York	17.00	17.00	17.00	16.87½
Spelter, St. Louis	3.80	.....	3.80	4.00
Lead, New York	4.37½	4.37½	4.37½	4.00
Lead, St. Louis	4.27½	.....	4.27½	3.95
Tin, New York	*27.25*	27.25	28.15	34.00
Antimony, Hallett, New York	8.75	8.75	8.75	9.62½
Nickel, New York	60.00	60.00	60.00	55.00
Tin Plate, Domestic Bessemer, 100 lbs., New York	4.19	4.19	4.19	4.84

Chicago.

1205 FISHER BUILDING, July 17, 1901.—(*By Telegraph.*)

The situation has been upset by the additional labor troubles which have developed during the past few days. The supply of a great many finished products has been seriously curtailed by the strike among the employees of the United States Steel Corporation, while the local Pig Iron trade has been interfered with by the strike of Chicago molders. These matters have been threatening for some time, and it is probably as well that they should come to a head, as they necessarily exert a continuously unfavorable influence while hanging over the market. Much inconvenience will doubtless result to many consumers in consequence of these strikes, which will injure vastly more than they benefit. The drought condition in the West, which has been so prominent a factor in depressing the stock market, has so far had apparently no effect on general business in this locality. The strikes have been far more potential than the drought.

Pig Iron.—Furnace agents have done some business during the past week, but it has included very little Foundry Pig Iron. The principal business was done in Gray Forge and Mottled Iron, of which a large consumer bought about 8000 tons in various lots. Additional quantities, it is believed, will be purchased. Some sales of Malleable Bessemer were also made, but only in small quantities. The immediate cause of lack of demand for Foundry Iron is the strike of molders, which began Monday morning, but happily confined to Chicago and seems not likely to spread. Foundrymen are not disposed to purchase materials until they know that a settlement is to be effected. The consumption of Iron continues on a large scale with important interests, such as the agricultural implement concerns; they have already ordered shipments to begin on contracts entered to take effect in August. The enormous wheat crop is responsible for this condition of activity, which has taxed the capacity of factories making harvesting machinery. Prices continue about the same as previously reported. The local furnace companies are not disposed to make lower quotations, having their order books well filled for the greater portion of the year. The Southern companies are in the main fairly firm and a large Virginia company selling in this market announce that no effort will be made to secure large business, as the company are now in possession of good contracts, which will keep them in excellent condition for several months. Southern Foundry Iron may perhaps be shaded 25c. per ton on our quotations. We quote as follows:

Lake Superior Charcoal	$17.00 to $18.00
Local Coke Foundry, No. 1	15.50 to 16.00
Local Coke Foundry, No. 2	15.00 to 15.50
Local Coke Foundry, No. 3	14.50 to 15.00
Local Scotch, No. 1	15.75 to 16.25
Ohio Strong Softeners, No. 1	16.00 to 16.50
Southern Silvery, according to Silicon	14.90 to 15.15
Southern Coke, No. 1	14.65 to 14.90
Southern Coke, No. 2	14.15 to 14.40
Southern Coke, No. 3	13.65 to 13.90
Southern Coke, No. 1 Soft	14.65 to 14.90
Southern Coke, No. 2 Soft	14.15 to 14.40
Foundry Forge	13.15 to 13.40
Southern Gray Forge	12.65 to 12.90
Southern Mottled	12.15 to 12.40
Southern Charcoal Softeners, according to Silicon	15.00 to 16.50
Tennessee Silicon Pig	16.00 to 17.00
Alabama and Georgia Car Wheel	19.90 to 20.50
Malleable Bessemer	16.25 to 16.50
Standard Bessemer	17.50 to 18.00
Jackson County and Kentucky Silvery, 8 per cent. Silicon	15.75 to 16.25

Bars.—The strike of the employees of the American Steel Hoop Company has necessarily diverted a great deal of business to the other companies manufacturing Bar Iron. They have been overrun this week with orders and inquiries, and as a result prices are now exceedingly firm at a minimum at 1.55c., Chicago, for mill shipments of Common Iron or Soft Steel Bars. Carload lots of Bars are held at 1.60c., and Hoops at 2c. Jobbers are also very busy, as may be expected under the circumstances, having a strong demand for their stock. Small lots are quoted at 1.80c. to 1.90c. for Steel Bars, 1.90c. to 2c. for Bar Iron and 2.20c. to 2.25c., base, for Hoops.

Car Material.—The demand keeps up surprisingly for all classes of Car Material. A great deal of new business has been entered the past week for Axles, Bars and Shapes, to be used in car construction.

Structural Material.—Quite a number of large buildings are now taking shape and will shortly be ready for bids. These include the great Rock Island depot, some storage buildings and one or two office buildings. It is reported that the Northwestern Railway Company are arranging for the erection of a new depot, which will be of enormous size, and will consume a large quantity of Steel. Considerable figuring is being done on buildings at points outside of this city. The past week is believed to have been the best for a long time in business coming from bridge companies and general consumers. Much more business could be secured if manufacturers were able to make better deliveries. Mill shipments are quoted as follows: Beams, Channels and Zees, 15 inches and under, 1.75c.; 18 inches and over, 1.85c.; Angles, 1.75c. rates; Tees, 1.80c.; Universal Plates, 1.75c. to 1.85.; small lots of Beams and Channels from local yards are quoted at 2.25c.; Angles, 2c. rates; Tees, 2.15c.

Plates.—A nice tonnage for mill shipment is steadily being booked. The condition of mill business has changed very much for the better, and mills can no longer make such prompt shipments. The local jobbers have seldom, if ever, had a better demand for shipment from stock. They find the demand coming from all classes of consumers. Prices are very firm. Mill shipments are quoted as follows: Tank Plate, ¼-inch and

heavier, 1.75c. to 1.80c., Chicago; Flange, 1.85c.; Marine, 1.95c. Jobbers are selling small lots from store at 1.90c. to 2c. for Tank and 2.25c. for Flange, with the usual extras for heads, segments, lighter gauges, &c.

Sheets.—The trade has been thrown into a state of consternation by the strike in the Sheet mills. Manufacturing consumers have been unable to accumulate any stock owing to the oversold condition of the mills for the last six months, and they find themselves encountering a condition of absolute scarcity. The independent mills can only supply a small fraction of the requirements of the trade. Jobbers are saving their stocks as much as possible, and no suspicion of a cut price is now entertained. The demand on their stocks is heavy and will continue to become more so if the strike lasts any length of time. Black Sheets are held at 3.40c. upward for No. 27, depending on the views of the seller, while Galvanized Sheets cannot be had lower than 70 off, with a disposition to advance prices to 65 and 10.

Merchant Pipe.—The possibility of labor troubles in the Pipe mills is causing much uneasiness in the trade, and buyers are anxious to secure as prompt deliveries as possible on their contracts. The supply of Pipe is by no means large. Manufacturers' prices, random lengths, are as follows:

	In carloads.		Less than carloads.	
	Blk.	Galvd.	Blk.	Galvd.
⅛ to ½ inch and 11 to 12 inches	59.2	46.2	54.9	40.9
¾ to 10 inches	66.7	53.3	61.9	49.9

Boiler Tubes.—A very good demand is experienced, and it is still found that stocks here are being drawn upon by consumers in other sections, who find it difficult to secure satisfactory shipment from mills. Quotations on less than carloads from jobbers' stocks are as follows:

	Steel.	Iron.
1 to 2½ inches	50	40
2¾ to 5 inches	57½	47½
6 inches and larger	50 and 5	47½

Rails and Track Supplies.—The Rail manufacturers are continuing to receive inquiries from railroad companies anxious to secure more Rails to cover their needs for this year. Some new projects are coming up, including quite a large number of electric lines, but in very few cases can Heavy Sections be bought for delivery before the closing months of the year. Even in such cases the Eastern mills are more likely to receive the business than the Western mills, which are said to be absolutely sold up. An order for 1000 tons of Light Rails for September delivery was refused because of inability of manufacturers to make the shipment at the time desired. Prices are firm at $28 for Heavy Sections and $29 to $33 for Light Sections. Track Fastenings are active and would be more so if the mills would be able to do additional business for the summer deliveries. Quotations are as follows: Splice Bars, 1.75c. to 1.80c.; Spikes, 1.95c. to 2c.; Track Bolts, with Hexagon Nuts, 2.80c. to 2.90c.; with Square Nuts, 2.65c. to 2.75c.

Merchant Steel.—A large company shipping heavily into this district reports June shipments the greatest in their history. The value was close to that of June in the boom year 1899, if not in excess of it. This is a good indication of the excellent condition of business this year. Some season contracts were placed during the week, showing that the requirements of the implement trade have not yet been completely covered. Mill shipments, Chicago, are quoted as follows: Smooth Finished Machinery Steel, 2c. to 2.10c.; Smooth Finished Tire, 1.85c. to 2c.; Open Hearth Spring Steel, 2.30c. to 2.40c.; Toe Calk, 2.40c. to 2.60c.; Sleigh Shoe, 1.85c. to 1.90c.; Cutter Shoe, 2.40c. to 2.60c.; Cold Rolled Shafting, 55 off. Ordinary grades of Crucible Tool Steel are quoted at 6½c. for carloads and 7c. to 7½c. from store; Specials, 12c. upward.

Old Material.—Dealers report very little business. Consumers seem to be covered for the present and labor troubles are interfering with contracts for future delivery. The situation may be said to be one of waiting for developments. It is not known whether the strike in the American Steel Hoop Company's mills will cause Scrap to be cheaper in Ohio and thus affect this market, or whether the greater consumption of Scrap in the local mills, which are running more actively, may cause an upward movement here. The dealers, under the circumstances, are not disposed to press their stocks for sale. The following are approximate quotations per gross ton:

Old Iron Rails	$18.50 to $19.50
Old Steel Rails, mixed lengths	13.00 to 13.50
Old Steel Rails, long lengths	15.00 to 15.50
Heavy Relaying Rails	22.00 to 23.00
Old Car Wheels	16.50 to 17.00
Heavy Melting Steel Scrap	12.50 to 13.00
Mixed Steel	10.50 to 11.00

The following quotations are per net ton:

Iron Fish Plates	$16.00 to $16.50
Iron Car Axles	18.50 to 19.00
Steel Car Axles	15.50 to 16.00
No. 1 Railroad Wrought	14.25 to 14.75
No. 2 Railroad Wrought	12.00 to 12.50
Shafting	15.50 to 16.00
No. 1 Dealers' Forge	12.00 to 12.50
No. 1 Busheling and Wrought Pipe	10.50 to 11.00
Iron Axle Turnings	9.50 to 10.00
Soft Steel Axle Turnings	9.00 to 9.50
Machine Shop Turnings	9.00 to 9.50
Cast Borings	4.25 to 4.50
Mixed Borings, &c	4.50 to 5.00
No. 1 Boilers, cut	11.50 to 12.00
No. 2 Boilers, cut	9.50 to 10.00
Heavy Cast Scrap	10.50 to 11.00
Stove Plate and Light Cast Scrap	8.00 to 8.50
Railroad Malleable	11.50 to 12.00
Agricultural Malleable	10.50 to 11.00

Metals.—Pig Lead is in excellent demand, with prices maintained at 4.32½c. for Desilverized and 4.42½c. for Corroding in 5-ton lots. Copper is unchanged at 17½c. for carload lots of Lake, and 17¼c. for Casting brands. Dealers quote selling prices on small lots of Old Materials as follows: Copper Wire and Heavy, 15½c.; Copper Bottoms, 14c.; Pipe Lead, 4¼c.; Zinc, 3¼c.

Coke.—The Coke trade will probably be somewhat lighter, owing to the labor troubles in the foundries. Prices are unchanged at $4.50 to $5 for 72-hour Foundry Coke.

The business in Old Railway Material conducted by L. K. Hirsch, 549 The Rookery, Chicago, has been taken over by the L. K. Hirsch Company, incorporated under the laws of Illinois.

The sales offices of the Carnegie Steel Company have been removed from the Marquette Building to the tenth floor of The Rookery, Chicago, now occupying a suite adjacent to the offices of the Illinois Steel Company. George Baker, manager of sales of the Illinois Steel Company, is also manager of sales of the Chicago branch of the Carnegie Steel Company.

Philadelphia.

FORREST BUILDING, July 16, 1901.

Considering the unsettled condition of labor and the pessimistic reports from the corn belt, the Iron market has been remarkably steady. There appears to be a good demand for everything, and although Pig Iron is a shade easier, the feeling is quite confident. The fact that stocks are still decreasing, and that production is slightly less than it was during the preceding month, are factors of great importance. Under such conditions it is not to be expected that prices will decline, although no advance is looked for in the near future. A steady uniform market is considered the best kind of a market, particularly when there is such a volume of business as there is at the present time. So far the strike has had no influence whatever in this district, unless it may have developed a feeling of caution which under other circumstances might have been lacking. Sales, as a matter of fact, have been very heavy, although in isolated cases low figures have been accepted, but the character of the orders probably warranted the innovation. Ordinarily there has been no change in quotations whatever, and those who failed to secure a share of the business are not worrying on the ground that they are carrying very little stock any way, and the day to day demand will take care of the current output at about last month's figures. The strike in the West is inimical to the fullest degree of activity, but the general opinion is that it will be of short duration, as the demands of labor receive no outside support, but, on the contrary, they are regarded as being totally unreasonable.

Pig Iron.—The market has a good tone, and prospects for the near future are regarded as distinctly favorable. Stability and uniformity are the leading features, and

this is about as much as the trade expect or hope for. Conditions are such that there cannot be much, if any, change in prices, and for the present there seems to be nothing in sight likely to cause any serious interruption. Reference has already been made to the strike among the local Steel workers, as well as to the reports of damage in the corn belt, but, strange to say, they appear to have little or no influence outside of the stock exchanges. Consumers of Iron in this vicinity have bought liberal quantities, some for deliveries during the third quarter; others have covered for the entire year, besides which there is an excellent day to day demand. Operations of this character indicate a degree of confidence which is very encouraging, and is ample proof that as yet business is not taking any back tracks. Prices are virtually the same as for some time past, although, as we said before, exceptionally low figures have been named in some instances, such as $13.50, delivered, Philadelphia, for good Mill Irons; $14.25 for No. 2 Plain, and $14.75 to $15 for No. 2 X, but for the general run of business prices are about as follows for Philadelphia and equivalent points: No. 1 X Foundry, $15.75 to $16; No. 2 X Foundry, $15 to $15.25; No. 2 Plain, $14.25 to $14.50; Standard Gray Forge, $13.75 to $14; Ordinary Gray Forge, $13.50; Basic (Chilled), $14 to $14.25.

Billets.—Not much doing, but prices are easier, and long deliveries could be had at concessions, providing the right kind of bids were made. Small lots Ordinary Steel are quoted at about $26.20 to $26.50, for Philadelphia deliveries.

Plates.—There is a fair demand, but orders are not large, although they are sufficient to keep the mills well employed. The strike in the West has not affected prices so far, but they will, no doubt, be higher if the suspension of work continues for any length of time. Meanwhile last week's prices are continued, as follows, for city and nearby deliveries: Plates, ¼-inch and thicker, 1.75c. to 1.80c.; Universals, 1.75c. to 1.80c.; Flange, 1.90c. to 2.10c.

Structural Material.—Mills in this vicinity are very busy and find great difficulty in meeting the demand promptly. Prices are, of course, firm, as last quoted, for seaboard or nearby deliveries: Angles, 1.75c. to 1.85c.; Beams and Channels, 15-inch and upward, 1.75c. to 1.85c.

Bars.—There is a moderately good demand, and there would probably be more if work in certain lines was not so much interfered with on account of the strikes. As it is, the mills are running as full as possible, but the output is restricted by the extreme heat, so that it does not require as much business as in ordinary times to absorb all that can be turned out. Prices steady and unchanged, as follows, for seaboard and nearby deliveries: Iron Bars, 1.55c. to 1.60c.; Steel Bars, 1.60c. to 1.65c.

Sheets.—The demand is very active, and it is difficult to take care of all the business that is offered. Prices firm, as follows, for Best Sheets (Common Sheets two-tenths less): No. 10, 2.50c.; No. 14, 2.70c.; No. 16, 2.90c.; Nos. 18-20, 3.40c.; Nos. 21-24, 3.50c.; Nos. 26, 27, 3.65c.; No. 28, 3.75c. to 3.80c.

Old Material.—The market is steady and firm at the inside figures, but pending some settlement with labor purchases are restricted to the covering of immediate requirements. Bids and offers are about as follows for deliveries in buyers' yards: Choice Railroad Scrap, $17.50 to $18; Country Scrap, $16 to $17; No. 2 Light Scrap, $12.50 to $13; Machinery Cast, $13.50 to $14; Heavy Steel Scrap, $15.75 to $16; Old Iron Rails, $19 to $20; Old Steel Rails, $15.75 to $16; Wrought Turnings, $11.50 to $12; Cast Borings, $7.50 to $8; Old Car Wheels, $17.50 to $18; Iron Axles, $21.50 to $22.50; Steel Axles, $17 to $18.

The Illinois Iron Mining Company of Chicago are sinking a two-compartment shaft in a promising deposit of iron ore near North Freedom, Sauk County, Wis., about 130 miles west of Milwaukee. The vein is stated to be about 30 feet wide and of good depth, while the ore runs 64 per cent. in iron and sufficiently low in phosphorus to be classed as Bessemer.

Cleveland.

CLEVELAND, OHIO, July 16, 1901.

Iron Ore.—All conditions in the lake transportation market are favorable to the Iron Ore carriers and the trade is looking up. Shippers are now bidding for every available boat and are obtaining such dispatch as is possible at the unloading docks in order that the movement may be increased during July. They are striving to materially lessen the decrease from last year's movement. It is the announced intention to bring down the lakes as much Ore as possible during the remainder of July and August and September, that the shipping pace may be more leisurely after October 1, when the rates promise to be better. The endeavor shall be to so handle the wild boats now that the burden of the late work may fall upon the contract tonnage. The interest of the shippers, therefore, is causing the rates to hold up good and strong. The quotations are as follows: From Duluth and head of the lake ports, 80c.; from Marquette, 70c.; from Escanaba, 60c. The shipment from the latter port has materially increased in the last few weeks.

Pig Iron.—A very much more healthy condition now prevails in the Pig Iron market. The buying during the week has been much heavier than formerly, and the prices are holding up well. It is the common report that orders are coming in in excess of shipment or production, and therefore that the market is very strong. This obtains especially in the Foundry grades. The big business did not start until within the last ten days, but since it opened up the market has been very active. The sales now are all to meet immediate demands and for delivery during July, as business beyond that period has not appeared yet. However, some of the buyers are looking around and inquiries have been heavy. The uncertainty as to the future of the Foundry grades is for the time being preventing any contracts of large dimensions being closed, but the inquiries denote that as soon as the outcome of the strike of the Amalgamated Association is known these contracts will be placed. The effect of the strike upon the Pig Iron market is so far problematical, depending entirely upon the turn of events in the next few days. It is possible that if consumption is curtailed to any extent the price will drop, although for the present, with shipments in excess of production, the market holds firm and prices are looking up rather than showing a tendency to decline. The quotations upon Foundry grades are $14.25 to $14.50 on No. 1, Valley furnace, and $13.75 to $14 for No. 2, Valley furnace. There is a lively demand for Bessemer for delivery during July, but so far nothing has shown up on the market for later than that. Inquiries indicate a good business early in August, but the buyers are holding back until the outcome of the strike is known. It cannot be learned that anything less than $15.25 has been accepted for material at the furnace. A report this week spoke of a sale of 19,000 tons of material, but as far as learned the contract has not been closed. Basic is nominally quoted at $15, but with slight transactions in that material. The amount of Iron of which the furnaces are possessed for immediate disposition is small.

Finished Material.—This has been another very good week in Finished Material, the activity which was noted two and three weeks ago having returned with added strength. Just now Bar Iron seems to be the leader, and demands for that material are increasingly large. The supply has been none too good at any time, but now it is noticeably short of the demand for it. This has brought out the talk that these prices are to be advanced to a parity with other grades of Finished Material, but as far as learned no dennite steps have been taken in that direction. Bars are, therefore, bringing 1.40c. for Bessemer and 1.50c. for Open Hearth, at the Pittsburgh mills. The demand for Plates has also increased, both because of some bridge orders and because of further activity in lake shipbuilding. Some of the Steel shipbuilding is now going to Ontario yards, the material for which will be obtained from Canadian mills, but vessels to take an American register are being ordered in sufficient numbers to warrant the statement that there will

be no lessening of demand for Ship Plates during the season. The prices are holding up firm, quotations being 1.70c. still. Structural Material remains one of the stable features of the market, with business being done mostly along the line of specification on former contracts, but the mills are kept busy fulfilling these demands, as orders are in excess on contracts. Sales of Rails are reduced to the minimum now, because most of the lines have covered their needs and not much new work is being projected. There has been talk of further advances in prices, but this is not looked for at once. In all grades of Finished Material orders are now in excess of production, and the business has a very healthy air. It is thought impossible that the strike shall not affect production in a more or less serious way, the natural tendency of which is to stiffen the prices obtained. The market, therefore, is strong, with an upward tendency.

Old Iron.—Considerable business in Scrap is now being done upon a reduced scale of prices. The decline has now been stopped, however, and there is some suggestion of permanency in the market. The following quotations might be made: No. 1 Wrought, $15 net; Heavy Steel, $15 gross; Steel Rails, $15 gross; Cast Borings, $6 net; Wrought Turnings, $10 net.

It was learned to-day in railroad circles that some contracts for Steel Rails have recently been made at $29 a ton, an advance of $1. The material was to fill out certain needs which the railroads have developed owing to an expansion and intended improvement. The orders include several thousand tons of Rails.

Cincinnati.

FIFTH AND MAIN STS., July 17, 1901.—*(By Telegraph.)*

The situation in the Pig Iron market shows a very decided change for the better. It is estimated that the selling agencies at this point booked about 50,000 tons of new business within the past seven or eight days. The selling, however, was done at something of a concession on the quotations as given herewith. It is said that No. 4 and Gray Forge sold down as low as $8.50, Birmingham basis, but this is denied by the parties who are said to have sold the Iron. It is pretty certain that $9 was shaded perhaps to the extent of a quarter on these grades. What No. 2 Southern Foundry was sold went at about $10, Birmingham, with possibly some concession in one or two instances. It is well also to state, however, that some of this grade was sold on the basis of $10.25, and the leading Southern interest is understood to be holding pretty stiffly at $10.50. As a result of the selling one thing appears very manifest, and that is that the market is much stronger and brighter than it has been for quite a number of weeks past. Judging by the volume of inquiry there will be a pretty fair amount of business transacted throughout the coming week, and while prices may not start upward just immediately it is pretty safe to say that there will be no more cutting for the time being. Among the trades made were quite a number for Northern Iron, which still maintains a relatively stronger position in the market than the Southern product. Freight rate from Birmingham is $2.75 to this point; from Hanging Rock district, $1. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1	$13.50 to $13.75
Southern Coke, No. 2	13.00 to 13.25
Southern Coke, No. 3	12.25 to 12.75
Southern Coke, No. 4	11.75 to 12.00
Southern Coke, No. 1 Soft	13.50 to 13.75
Southern Coke, No. 2 Soft	13.00 to 13.25
Southern Coke, Gray Forge	11.75 to 12.00
Southern Coke, Mottled	11.75 to 12.00
Ohio Silvery, No. 1	15.50 to 16.00
Ohio Silvery, No. 2	14.50 to 15.00
Lake Superior Coke, No. 1	14.50 to 15.00
Lake Superior Coke, No. 2	14.00 to 14.50
Lake Superior Coke, No. 3	13.50 to 14.00
Southern Basic	13.75 to 14.00

Car Wheel and Malleable Irons.

Standard Southern Car Wheel, chilling grades	$18.25 to $18.75
Standard Southern Car Wheel, No. 2	17.25 to 17.75
Lake Superior Car Wheel and Malleable	18.50 to 19.00

Plates and Bars.—The market has been quite active, and the feeling decidedly stronger. Quotations given herewith are understood to be very strongly maintained, and higher prices in some instances being asked. We quote, f.o.b. Cincinnati: Iron Bars, in carload lots, 1.60c., with half extras; same in small lots, 1.80c., with full extras; Steel Bars, in carload lots, 1.55c., with half extras; Base Angles, in carload lots, 1.80c.; Plates, ¼-inch and heavier, 1.80c.; Sheets, No. 16, 2.50c.

Old Material.—There is a good healthy feeling in the market, and trade has been quite active throughout the week on about the same basis as quoted in the last report. We quote dealers' buying prices, f.o.b. Cincinnati, as follows: No. 1 Wrought Railroad Scrap, per net ton, $13.25 to $13.50; Cast Railroad Machine Scrap, $12.25 to $12.75; Iron Axles, $18.75 to $19; Iron Rails, $16.75 to $17.25; Steel Rails, rolling mill lengths, $14.75 to $15.25; short lengths, $13.75 to $14; Car Wheels, $15.75 to $16.25. All prices except No. 1 Wrought on the basis of gross tons.

Birmingham.

BIRMINGHAM, ALA., July 15, 1901.

Since publication of last letter the volume of business in Iron has been small, and has been mainly of a retail character. Small orders have been the rule. During the past week there was a little more disposition manifested to buy, but it did not result in any materially increased business. This can be explained by the fact that there has been some accumulation of off grade Iron which holders did not desire to carry and to move which it was necessary to grant concessions in price. The price was quoted far and wide, but the attendant circumstances were omitted, as they were not made public. The result was a sagging market, affecting to a greater or less degree all the grades. Gray Forge and Mottled went as low as $8.50, and the evidence leads to the conclusion that No. 2 Foundry sold as low as $10. These low sales may be characterized as sporadic. They were not the general market, and the sales were of no significance in volume. They simply represented a clean up in individual cases. But they had their effect. When other buyers came in to supply their wants they found the platter licked clean and there was a halt in the demand and dulness brooded over the market.

There was a tacit understanding between some interests that quotations should be given on a basis of $10.50 for No. 2 Foundry, and this quotation has been given as the market. But there were sales at $10.25 and a few at $10. At the close of the week there was a perceptible stiffening in price and a disposition to hold it at $10.50. There was an increased inquiry for the Soft grades and some lots of 250 tons changed ownership on the basis of $10.50 for No. 2 Soft. Gray Forge was pegged at $9.25, and sales were registered at that figure. In some cases special brands went at $9.50 and some went at $9. But the business was not active enough to enlist much interest. There were no transactions reported in Basic Iron and nothing of interest was given out concerning Steel. Lately it has not been so active as has heretofore been reported.

Joseph Schwab of the United States Steel Corporation was here the past week. The Steel plant seemed to be his mecca, as he very carefully took it all in. His visit has aroused the usual gossip, but its object is simply a matter of conjecture. We all know that it was not his health. Time alone will develop it.

The Southern Car & Foundry Company have at last gotten their affairs into such shape that active operations can be commenced for the erection of their plant at Ensley. Captain Elliott, president of the company, stated to your correspondent that their order books were well filled and that their registered orders so far aggregate $3,000,000 or more. They include 3600 cars of various descriptions, and one-third of the business came from one railroad. Hard times for months to come can gain no foothold there. A new foundry and machine shop was announced the past week, to be located at East Birmingham. The proprietors are local men and were leading employees of the East Birmingham Machine & Foundry Company.

The new shops of the Hardie-Tynes Company are now in full blast. Among their latest orders are two 200

horse-power engines, one for local parties and one to go to Minneapolis, Minn.

The Birmingham Electric Railway Company have contracted for the erection of a huge car barn and have placed an order with a St. Louis car company for 130 new cars to be placed on their lines.

There has been a good deal of prospecting for oil in locations where indications are favorable and options on property have been freely taken. Companies have been organized and the demand for boring machinery has been free. Operations will commence as soon as machinery is placed. One lucky strike will develop a craze that will bring millions into the district. Development of the brown ore fields at Leeds is again under way and this time will be thoroughly prosecuted to a definite conclusion.

In Eastern Alabama are some bodies of Gray Specular Iron Ore running over 50 per cent. Metallic Iron, easily worked in the furnace and making with a changing burden the kind of Iron desired. With the immense amount of Coal in sight and accessible, these Iron properties will in time be of great value. They will, as the brown ore decreases, take its place and "save the situation." In time this matter will again be mentioned, as there is vast wealth in ore running 50 per cent. Metallic Iron.

Pittsburgh.

HAMILTON BUILDING, July 17, 1901.—(*By Telegraph.*)

Pig Iron.—The market is practically lifeless, all interest being centered on the strike. The nominal price of Bessemer Iron in small lots is $15.25, Valley, or $16, Pittsburgh. None of the large consumers are buying, and only small lots of 25 to 50 tons are selling. Gray Forge is very dull, and small lots bring about $14, Pittsburgh. Foundry Iron is quiet and prices seem weak. We quote: Bessemer Pig, $15,25, Valley, or $16, Pittsburgh; Gray Forge, $13.75 to $14, Pittsburgh; No. 1 Foundry, $14.50 to $15; No. 2, $14 to $14.50; No. 3, $13.75 to $14. We note a sale of 100 tons of No. 2 Foundry at about $14.10, Pittsburgh. Some very large lots of Southern Forge Iron were sold in this market a week ago, aggregating probably 10,000 tons, at $13 to $13.25, f.o.b. Pittsburgh.

Billets.—The Steel market is about as dull as it could possibly be, and only an occasional small lot is being sold. Bessemer Billets, 4 x 4 inch, for prompt delivery, are quoted at $24 to $24.50, delivered in Pittsburgh, Valley or Wheeling districts. Steel for last quarter is lower and could be bought at $23.50 or less.

(By Mail.)

The full details of the rolling mill strike, which is the all absorbing feature in the Iron trade now, are given elsewhere in this issue. The immediate effect of the strike has been to stiffen prices on Sheets, Steel Bars and Muck Bar. Should the strike be prolonged it is not unlikely the price of Steel will soften a little on account of so many finishing mills being idle and taking so much consumption out of the market. Aside from the strike there is nothing of special interest to note. The demand for Pig Iron and Steel is quiet, while for Finished Material there is a moderate demand and the market is firm. There is no doubt but that the United States Steel Corporation are giving the Iron market a stability in prices that it never had before. This time a year ago the market was in very much worse condition in every way than it is now.

Muck Bar.—There have been some heavy sales of Muck Bar in the past week and at good prices. We note sales of 5000 to 6000 tons of standard grades at $30.50, delivered buyer's works, in Pittsburgh district. Eastern Muck Bar can now be laid down in the Pittsburgh market owing to the heavy advance in price. We quote at $30 to $30.50, f.o.b. cars, Pittsburgh. Should the Amalgamated Association succeed in closing down more mills the supply of Muck Bar will be materially decreased and also the consumption.

Ferromanganese.—There is very little doing and we quote Domestic 80 per cent. Ferro at $55, delivered at buyer's works. Foreign Ferro continues to be offered in this market at lower prices.

Structural Material.—The Keystone Bank Building in this city, which will be larger than was first intended, will require from 1500 to 2000 tons of material, which has been placed with Jones & Laughlins. The American Bridge Company, and also the independent bridge concerns, are all very busy and are placing liberal orders for material. The new works of the McClintic-Marshall Construction Company, at Rankin, will soon be finished. A good deal of Eastern work is being placed, much of the material coming to the two local mills. This will be much the biggest year in the history of the Beam business. We quote: Beams and Channels, up to 15-inch, 1.60c.; over 15-inch, 1.70c.; Angles, 3 x 2 up to 6 x 6 inches, 1.60c.; smaller sizes, 1.55c. to 1.60c.; Zees, 1.60c.; Tees, 1.65c.; Steel Bars, 1.40c. to 1.50c., half extras, at mill; Universal and Sheared Plates, 1.60c. All above prices are f.o.b. Pittsburgh.

Plates.—Some very good orders are being placed, a good deal of Government work being given out lately, much of which has gone to the leading mill. The mills, with the exception of two or three of the largest makers, are pretty well up with back orders and prompt delivery can be had. There is no change in prices, nor is there likely to be for some time. The strike does not affect the Plate mills. We quote: Tank quality, ¼-inch and heavier, 1.60c.; 3-16-inch, 1.70c.; under 3-16-inch and above No. 10, 1.75c.; Flange or Boiler Steel, 0.1c. advance over the base of Tank; Marine and Fire Box, American Boiler Manufacturers' Association specifications, 0.2c. advance over Tank; Still Bottom Steel, 0.3c. advance over tank; Locomotive Fire Box Steel and equivalent specifications, 0.5c. advance over Tank, all f.o.b. Pittsburgh.

Rails.—The three leading Rail interests, United States Steel Corporation, Pennsylvania-Cambria and Colorado Fuel & Iron Company, have fixed the price for next year's delivery at $28, at mill. Jones & Laughlins of this city will not be factors in the Rail trade until next year. As yet very little new business for 1902 has been placed.

Bars.—The shut down of the mills of the American Steel Hoop Company by the strike has already had a tendency to stiffen the price of Bars. Should the strike be prolonged there is no doubt but that higher prices will rule. Nearly all the mills of Republic Iron & Steel Company that were closed for inventory and repairs have again started, and this concern are in good shape, having had no trouble with their men. Some contracts for Steel Bars and Shapes have been placed by implement makers, amounting to probably 25,000 tons. We quote Steel Bars at 1.40c. to 1.45c., half extras, at mill. On Open Hearth Steel Bars $2 a ton advance is charged, and also extras for high carbons. We quote Common Iron Bars 1.40c. to 1.45c., half extras, Valley mill. We quote Hoops at 1.75c. to 1.85c., base, the lower price being on larger lots. Bands up to 12 gauge are sold on the Steel Bar Card and we quote at 1.40c., half extras.

Sheets.—The immediate effect of the Sheet strike has been to stiffen the price of Sheets, and outside mills that have signed the Amalgamated scale and are running full are quoting on the basis of about 3.20c. for No. 27 and 3.25c. for No. 28, in carloads. The prices of the leading Sheet interest are much lower than this, but owing to the tie up of so many of their mills it is likely that the output of the nonunion mills that are running will be taken entirely to supply their contracts. Outside mills rolling Galvanized Sheets are booking business on the basis of 70 and 10 per cent. off, at mill. The price of the leading interest on Galvanized is lower than this, but mills that are in shape to make deliveries have no trouble in selling at 70 and 10 off. There is a very heavy demand for both Black and Galvanized Sheets, and prompt deliveries of either cannot be had except at a premium over regular prices.

Merchant Steel.—Prices of Cold Rolled Shafting are being more or less cut, but it is probable that the makers will get together this week and will try to stiffen the market. Demand for Merchant Steel is fair, considering

the season of the year, and a few implement makers are placing some contracts. We quote: Tire Steel, 1.60c. to 1.70c.; Toe Calk, 1.85c. to 2c.; Open Hearth Spring, 2c. to 2.10c.; Plow Slabs, 2c. to 2.10c.; Cold Rolled Shafting, 55 per cent. off in carloads, 50 per cent. in less than carloads; Sleigh Shoe Steel, 1.65c. to 1.75c.; Tool Steel, 6c. per lb. and upward, according to the quality. On Tool Steel the mills allow freight east of the Mississippi River.

Skelp.—Sales of Grooved Iron Skelp for prompt delivery have been made at 1.90c., f.o.b. cars Pittsburgh. We quote Grooved Iron Skelp at 1.85c. to 1.90c., and Sheared, 1.90c. to 2c., depending on sizes. Steel Skelp is 1.75c. to 1.80c., and Sheared, 1.80c. to 1.85c.

Tubular Goods.—The strike in the Sheet and Bar mills has not affected any of the Tube mills, nor is it likely that it will. The general effect, however, has been to further strengthen prices on Tubes, which are very firm, and on some sizes of Pipe jobbers are able to get premiums for prompt delivery. A heavy tonnage of Tubing and oil well supplies in general continues to be sent from the Pittsburgh territory to the Texas oil fields. As noted, prices are very firm, and to consumers in carload lots are as follows:

Merchant Pipe.

	Per cent. Black.	Per cent. Galvd.
⅛ to ½ inch and 11 to 12 inch	61	48
¾ to 10 inch	68½	56

Casing, Random Lengths.

	S. & S.	I. J.
2 to 3 inch	58	53½
3¼ to 4 inch	63	59
4¼ to 12½ inch	65	61½

Casing, Cut Lengths.

	S. & S.	I. J.
2 to 3 inch	53½	59
3¼ to 4 inch	59	55
4¼ to 12½ inch	61½	57½

Boiler Tubes.

	Up to 22 feet. Per cent.
Steel.	
1 inch to 1⅜ inch and 2¾ inch to 5 inch, inclusive	65½
2 inch to 2½ inch, inclusive	60
6 inch and larger	59
Iron.	
1 inch to 1½ inch and 2½ inch	43½
1¾ inch to 2¼ inch	43
2¾ inch to 13 inch	53

Prices made by the mills to the jobbers are from 5 to 10 per cent. or more lower than the above, depending on the order.

Coke.—Output of Coke in the Connellsville region last week was 200,450 tons, a decrease over the previous week of 32,105 tons. Shipments were 9623 cars. The H. C. Frick Coke Company have absorbed the smaller Coke concerns of the United States Steel Corporation and now control about 18,000 ovens, all located in the Connellsville region.

St. Louis.

CHEMICAL BUILDING, July 16, 1901.

Pig Iron.—There has been considerable improvement in the demand for Pig Iron during the past two weeks and all indications are favorable for continued improvement. The market may be said to be active and satisfactory, but in prices there is but little change. Several large sales were reported last week, one of the large car builders buying 5000 tons of Southern Coke Iron, another large interest 500 tons of Malleable Iron, and another concern 2500 tons of Southern Coke and Charcoal Iron. We quote carload lots as follows, f.o.b. St. Louis:

Southern, No. 1 Foundry	$14.25 to $14.50
Southern, No. 2 Foundry	13.50 to 13.75
Southern, No. 3 Foundry	13.00 to 13.25
Southern, No. 4 Foundry	12.50 to 12.75
No. 1 Soft	14.25 to 14.50
No. 2 Soft	13.50 to 13.75
Gray Forge	12.25 to 12.50

Bar Iron.—A better demand for both Iron and Steel Bars is reported, with lots of business in sight for a long time ahead. Mills find it difficult to make prompt shipments, however, as many of the mills are closed down on account of labor troubles and scarcity of help. Mills quote Iron Bars at 1.55c. to 1.60c. and Steel Bars at 1.60c. to 1.65c. Jobbers quote Iron Bars at 1.85c. to 1.90c.; Steel, 1.95c. to 2c., full extras.

Rails and Track Supplies.—New inquiries are coming in daily and a continued demand is looked for. A larger tonnage would be booked if deliveries could be met. Track Supplies are also in good demand. We quote as follows: Splice Bars, 1.85c. to 1.90c.; Bolts, with Square Nuts, 2.55c. to 2.65c.; with Hexagon Nuts, 2.75c. to 2.80c.; Spikes, 2c.

Pig Lead.—Business continues in good volume, Soft Missouri Lead selling at 4.27½c. Chemical Lead is practically not obtainable, and consumers who require this description pay 4.40c. to 4.50c. Desilverized remains unchanged at 4.32½c.

Spelter.—No change has taken place in the market here. Sales are steady at 3.80c. to 3.82½c., according to quantity.

New York.

NEW YORK, July 17, 1901.

Pig Iron.—The market in this district has been very flat, sales being very limited. Some keen competition has developed between Southern makers over one moderate sized order in New England. We quote: Lehigh, Schuylkill and Virginia Irons, No. 1, $16 to $17.50; No. 2 X, $14.75 to $15.75; No. 2 Plain, $14 to $14.50; Gray Forge, $14 to $14.50; Tennessee and Alabama brands, No. 1 Foundry, $14.75 to $15; No. 2 Foundry, $14 to $14.50; No. 1 Soft, $14.50 to $15; No. 2 Soft, $14 to $14.50; No. 3 Foundry, $13.25 to $13.50; No. 4 Foundry, $12.75 to $13.25; Gray Forge, $12.75 to $13.

Cast Iron Pipe.—No large orders have been placed during the past week, and we continue our quotation of $25 to $25.50 per gross ton for 8-inch Pipe at tidewater.

Steel Rails.—The market continues very quiet, with the mills generally oversold. So far as we can learn, no orders for 1902 delivery have yet been placed. We quote $28 for Standard Sections, $33 to $33.50 for Girder Rails, and $22 to $23 for Relayers. We quote Spikes, 1.80c. to 1.85c.; Splice Bars, 1.50c. to 1.60c.; Hexagon Track Bolts, 2.65c. to 2.70c., at mill.

Finished Iron and Steel.—Leading structural concerns report the tonnage coming up now as rather light. Among the larger orders in sight is the material for the Woman's Hotel, involving about 1100 tons. A fair sized order has also been taken for a manufacturing plant in New Jersey. We quote as follows at tidewater: Beams, Channels and Zees, 1.75c. to 1.80c.; Angles, 1.75c. to 1.80c.; Tees, 1.80c. to 1.85c.; Bulb Angles and Deck Beams, 2c.; Sheared Steel Plates are 1.80c. to 1.85c. for Tank, 1.90c. to 1.95c. for Flange, 2c. to 2.05c. for Fire Box. Charcoal Iron Plates are held at 2.25c. for C. H. No. 1, 2.75c. for Flange, and 3.25c. for Fire Box. Refined Bars are 1.58c. to 1.60c.; Soft Steel Bars, 1.62½c. to 1.65c., and Hoops, 1.90c. to 2c., base, on dock.

Metal Market.

NEW YORK, July 17, 1901.

Pig Tin.—Business is very dull and demand from consumers is at low ebb. As reasons for this the protracted hot spell during which many of the mills were forced to close and the strike which has affected the Tin Plate mills are made to stand. Prices for spot are considerably below London, where the squeeze on spot still continues. At the close to-day spot was offered at 27.70c., but the only bid that could be secured was at 27.12½c. The London market, after having declined from £140, which was the closing price for spot last Wednesday, to £127, advanced again to £133 7s. 6d. yesterday, and closed to-day £133 for spot and £116 for three months' futures. Future deliveries here are entirely neglected, but were obtainable at about 1c. to 1½c. below spot for deliveries during September to November. The first half monthly shipments from the Straits amounted to 2160 tons, as against 1290 tons for the same period of last year.

Copper.—The market here is still quoted 17c. for Lake and 16⅝c. for Electrolytic and Casting. These quotations are, however, entirely nominal, as there is no demand from home consumers nor from abroad. The London market, after declining last Thursday to £66 10s., which was the lowest since March, 1899, has since,

through the support of American buying, advanced to £68, which was to-day's closing price for spot. Futures to-day were quoted £68 8s. 9d., and Best Selected advanced 10 shillings to £74.

Pig Lead—Has experienced no change whatever. Demand is of moderate proportions and prices are held steadily at 4.37½c. for Desilverized, New York. London has declined a shade, being quoted to-day £12 3s. 9d.

Spelter—Is still very dull, with prices ruling unchanged at 3.90c. to 3.95c. for spot to September delivery. St. Louis is quoted dull at 3.80c., and London is also dull, with £16 10s. as the ruling quotation.

Antimony.—Business is not active and prices are unchanged at 8¾c. for Hallett's and 10¼c. for Cookson's.

Nickel—Is firm and without change at a basis of 60c. for lots not covered by yearly contracts.

Quicksilver—Is unchanged, prices being quoted at $51 per flask of 76½ lbs. for lots of 50 flasks and more. The London market is still quoted £9 2s. 6d.

Tin Plate.—While production has been shut off, owing to the strike at the mills, there has been no change in quotations on the straggling lots which the American Tin Plate Company have in stock and are now selling. Prior to the strike the mills were practically sold up to October 1, and business was being booked for November and December. The prices which were being named by the American Tin Plate Company for such delivery were on a basis of $4.19 per box of Standard 100-lb. Cokes, f.o.b. New York, and $4 per box, f.o.b. mill. The Welsh market has advanced 3 shillings, quoting to-day 13 shillings 10½ pence.

John Stanton reports the Copper production in the United States and of the foreign reporting mines and United States exports as follows, in gross tons of 2240 lbs.:

	Reporting mines.	Outside sources.	Total U.S. product.	Product foreign mines.	U. S. exports.
First half 1895....	70,612	9,100	79,712	42,484	34,215
Second half 1895...	84,885	6,600	91,485	43,674	30,507
Total 1895.....	155,497	15,700	171,197	86,178	64,722
First half 1896....	94,180	7,200	101,380	42,255	58,216
Second half 1896...	95,314	7,200	102,514	43,941	67,287
Total 1896.....	199,494	14,400	203,894	86,196	125,503
First half 1897....	103,651	5,000	108,651	44,263	64,870
Second half 1897...	100,555	6,900	107,455	44,007	64,340
Total 1897.....	204,206	11,900	216,106	88,270	129,210
First half 1898....	112,687	7,800	120,487	40,880	68,284
Second half 1898...	103,535	10,250	113,785	43,674	76,831
Total 1898.....	216,222	18,050	234,272	84,554	145,115
First half 1899....	111,987	12,500	124,487	43,629	56,460
Second half 1899...	118,818	18,900	137,719	45,611	63,351
Total 1899.....	230,806	31,400	262,206	89,240	119,811
First half 1900....	114,177	20,400	134,577	43,153	90,747
Second half 1900...	113,810	20,400	134,104	46,278	69,335
Total 1900.....	227,987	40,800	268,681	89,431	160,082
First half 1901....	112,794	20,600	133,394	46,847	50,027

The New York Machinery Market.

NEW YORK, July 17, 1901.

Another important project has just been placed before the heavy engine and horizontal water tube boiler trades. Proposals have been asked for and are being received for the engines and boilers to be installed in the mammoth power station to be erected in connection with the New York Rapid Transit Railroad. As the number of concerns that are able to handle so great a piece of work are rather limited, there was no public invitation for bids. The specifications were simply sent to the few concerns who are in a position to fulfill the contract, and their proposals were received last week.

There are to be eight engines of special type, each to operate at best efficiency when indicating 7500 horsepower, and to have a maximum indicated power of 11,000 horse-power. The design of these engines, as well as the size, is to be practically the same as those purchased for the new electric power station now being erected by the Manhattan Elevated Railway Company.

There are to be 48 horizontal water tube boilers, each to have a heating surface of about 6500 square feet.

The proposals have been submitted to John B. McDonald, who has the contract for building and equipping the Rapid Transit Railroad. The location for the proposed power station has not been decided upon as yet. J. Van Vleck, who is the chief engineer for the Rapid Transit Subway Construction Company, has the matter in hand.

There has been a little comment in the trade regarding an extension to be built to the power station of the Brooklyn Rapid Transit Company on the corner of Kent avenue and Division street, Brooklyn. It was stated that the company intended purchasing additional equipment for this work. We are informed by Thomas E. Murray, the company's engineer, that the only contracts to be awarded in connection with this work will be for the building itself. As to additional equipment, the company propose to install one of the 4000 horse-power engines recently purchased from the Dickson Mfg. Company of Scranton, Pa. Only 600 horse-power of boilers will be required, and these will be taken from a large lot also recently purchased from Thayer & Co., Incorporated, of 39-41 Cortlandt street.

Orders are being placed by the American Locomotive Company of 25 Broad street, New York, for large quantities of machinery and equipment to be placed in extensive additions being built to the Schenectady Locomotive Works, which were recently absorbed by the American Company. The new extensions include a forge shop in addition to numerous other buildings in which machinery is to be installed. An order has been placed with the Heine Safety Boiler Company of 11 Broadway for 1500 horse-power of water tube boilers.

An extensive addition is about to be built to the plant of the David Moffat Company, leather manufacturers, of Elizabeth, N. J. The principal building, which is to be 225 by 75 feet and four stories high, is to be equipped for the finishing of harness leather. There will also be a power house, which will be equipped with a 250 horsepower boiler and engine. A ventilating plant is also to be installed. None of the apparatus has been purchased as yet. T. B. Polhemus, who is associated with Carrere & Hastings, architects, of 28 East Forty-first street, has ben retained as engineer and architect.

A new factory is to be built on the corner of Seventh avenue and Sixteenth street, New York, by the Oxley & Enos Mfg. Company, manufacturers of gas fixtures, whose offices are located at 371 Fifth avenue, New York. The new building will be 100 x 150 and six stories high. It will be equipped with new machinery, including boilers and engine. Gas fixtures, &c., will be manufactured on an extensive scale. The plans for the building were prepared by Clinton & Russel, architects, of 32 Nassau street.

It is announced in the trade that Rutherford & Barnes, soap manufacturers, of 390 Driggs avenue, Brooklyn, are to build a three-story addition to their plant as well as a new boiler house. Specifications are now being prepared for the machinery, boilers, &c., which will be installed. Amos W. Barnes, 901 Walnut street, Brooklyn, is said to be the architect.

Extensions to be made by the Siegel-Cooper Company of New York include the installation of additional hydraulic elevators, together with the necessary pumps and apparatus.

It is stated that the Wantage Engineering Company, Limited, of Wantage, England, are receiving quotations from American firms for a large new machinery equipment for proposed new machine shops.

There are a number of Government matters which have attracted the attention of the machine tool trade and which are scheduled soon to be put through. Bids for five of the jobs will be opened on July 23, at the Bureau of Supplies and Accounts. The specifications have been sent out by A. S. Kenny, paymaster-general United States Navy, and by the commandants of the various navy yards at which the improvements are to be made. Cupolas, blowers and pumps are desired, besides machine tools at the New York Navy Yard. For the navy yard at Norfolk, Va., a quantity of motors and a hoisting engine are required and machine tools and motors are to be purchased for the Portsmouth, N. H., Navy Yard, and a fair sized lot of machine tools will be installed at the Boston Navy Yard. For the League Island Navy Yard a quantity of machine tools is required, as well as bolts, piping, &c.

Bids will be received at the United States Engineer Office, Charleston, S. C., for furnishing and installing

QUOTATIONS OF IRON STOCKS DURING THE WEEK ENDING JULY 17, 1901.

Cap'l Issued.		Thursday.	Friday.	Saturday.	Monday	Tuesday.	Wednesday.	Closing quotations.	Sales.
$10,000,000	Am. Bicycle Co., Com.....	- 4½	.....	.....	.....	.....	.....	...	.....
20,000,000	Am. Bicycle Co., Pref.....	.....	.....	.....	.....	.....	.....	...	.....
10,000,000	Am. Bicycle Co., Bonds....	.....	.....	.....	.....	.....	.....	...	.....
29,000,000	Am. Car & Foundry, Com..	28 -29⅜	27½-29½	28¼-29⅛	27 -28¼	27⅛-28⅜	28 -29⅜	29¼	19,815
29,000,000	Am. Car & F'ndry, Pref.§.	83¼-84½	81¼-83¾	83 -83⅝	82 -82¼	82½-83½	83⅝-84	84	3,700
7,500,000	Bethlehem Iron†.....	-60½	.....	.....	.....	-60	.....	...	50
15,000,000	Bethlehem Steel‡‡.....	-23	22½-22⅝	22 -22½	22 -22⅛	21⅛-23⅛	-22⅛	...	3,200
7,974,550	Cambria Iron, Phila.*.....	.....	.....	-47⅛	.....	.....	.....	...	100
16,000,000	Cambria Steel**.....	24 -24¼	23½-23¾	23½-24	.....	-23⅛	22⅞-23	...	3,300
17,000,000	Colorado Fuel & Iron.....	99 -101	90 -98	97¼-99½	92⅞-94⅞	93½-95½	94 -99½	99½	17,900
24,410,900	Crucible Steel, Com.....	.....	.....	.....	.....	.....	.....	...	.....
24,399,500	Crucible Steel, Pref.....	.....	.....	.....	.....	.....	.....	...	.....
1,975,000	Diamond State Steel‖§§...	3⅜- 3½	- 3⅜	.....	3 - 3¼	.....	- 3¼	...	1,100
15,000,000	International Pump, Com..	37 -38	36¾-38	.....	-37	.....	.....	...	1,100
8,850,000	International Pump, Pref..	.....	.....	.....	-82	.....	.....	...	100
11,000,000	International Silver.....	- 7	5½- 7	.....	.....	- 6	.....	...	700
10,750,000	Penna., new, Com, Phila...	.....	.....	.....	-45	-45	.....	...	275
16,500,000	Penna., new, Pref., Phila.§.	85 -85½	.....	.....	-89	.....	.....	...	350
12,500,000	Pressed Steel, Com.....	40 -42	40 -43	-41	40 -41½	-41	41 -42	42	2,970
12,500,000	Pressed Steel, Pref.....	82¼-84¼	-82	.....	.....	-84½	84½-84⅞	84⅞	1,000
27,191,000	Repub. Iron & Steel, Com..	18 -19⅜	18 -18½	18½-19	17 -18	17⅞-18½	18 -19½	19½	12,700
20,306,900	Repub. Iron & Steel, Pref..	72½-73	72 -73	72 -72¾	69¾-72	72⅛-72¾	73½-74	74	5,000
7,500,000	Sloss-Sheffield S. & I., Com.	.....	.....	-33	.....	.....	.....	...	100
6,700,000	Sloss-Sheffield S. & I.,Pref.§	.....	-80¾	-80	.....	.....	.....	...	800
20,000,000	Tennessee Coal & Iron....	59¾-62⅝	57¼-61½	58 -60	55½-59	57⅛-59	57½-61	61	24,900
1,500,000	Tidewater Steel‖.....	6¼- 7	6½- 7½	- 6¾	- 7½	.....	- 7⅛	...	1,000
506,473,400	U. S. Steel Co., Com.‖‖...	42½-44⅜	41 -43⅝	41 -42⅝	37 -39	37⅝-38⅝	37½-40½	40⅜	562,075
508,486,300	U. S. Steel Co., Pref.‖‖...	93 -94⅛	91¼-93⅞	90¾-92¼	86½-89⅞	86¼-87	86 -88⅞	88⅞	337,850
1,500,000	Warwick I. & S.‖.....	.....	- 7	.....	7 - 7⅛	.....	.....	...	700

NOTE.—United States Steel preferred ex-dividend on Tuesday. Cambria Warrants, 31,000.

Preferred stocks 7 % cumulative unless otherwise stated. § 7 % Non-Cu. §§ New stock. ‖ Par $10. ‡‡ Par $50, $1 paid in. ‖‖ Authorized Capital $550,000,000 Common; $555,000,000 Preferred; * Par $50. ** $10.50 per share paid in. † 6 % guaranteed by Beth. Steel Co. Late Philadelphia sales by telegraph.

Bonded Indebtedness: American Bicycle Co., $10,000,000 sinking fund gold debentures 5 %; Cambria Iron Co., $2,000,000 6 % debenture 20-year bonds, 1917, payable option 5 years, assumed by Cambria Steel Co.; Diamond State Steel Co., property leased from Diamond State Steel Co. at 4 % on $1,000,000, $6.25 on Steel stock paid in, $1.25 called for June 1st, total capital $2,000,000; International Pump: Blake & Knowles S. P. Co $1,000,000 6 %; Tennessee C., I. & R. R. Co., $8,367,000 6 %, $1,114,000 7 %, $1,000,000 7 % cu. pref.; Pennsylvania Steel, $1,000,000 5 % Steelton 1st, 1917, $2,000,000 5 % Sparrow's Point 1st, 1922, $4,000,000 consolidated, both plants; Bethlehem Iron, $1,351,000 5 % maturing 1907, interest and principal guaranteed by Bethlehem Steel Co.; Republic Iron & Steel, none; Warwick Iron & Steel, none; Colorado Fuel & Iron Co., Col. Fuel Co. Gen. Mort. 6 % $880,000, Col. Coal & Iron Con. Mort. 6 % $2,644,000, Col. Fuel & Iron Gen. Mort. 5 % $2,974,000, also outstanding $3,000,000 preferred stock; Sloss-Sheffield St. & I. Co., Sloss I. & S. first mortgage 6 %, $2,000,000, Sloss I. & S. general mortgage 4½ % $4,000,000 U. S. Steel Corporation $304,000,000 5 % gold bonds, also Am. S. & W. Co. $130,656, Federal Steel Co. $9,822,000 Illinois 5 %, $7,417,000 E. J. & E. R. R. 5 %, $1,600,000 Johnson 6 %, $6,732,000 D. & I. R. R. R. 5 % $1,000,000 2d D. & I. R. R. R. 6 %, $10,000 land grant D. & I. R. R. R. 5 %; National Steel $2,561,000 6 %

pumping machinery for sea going suction dredge until August 14. Information furnished by J. C. Sanford, captain engineers.

At the United States Engineer Office, 2001 I street, Northwest, Washington, D. C., sealed proposals will be received for furnishing and installing electric light and power plant at Fort Hunt, Va., until August 9. Information furnished by Chas. J. Allen, lieutenant-colonel engineers.

Sealed proposals will be received at the Bureau of Yards and Docks, Navy Department, Washington, until August 3, 1901, for installing a central heating system at the navy yard, Boston, Mass. Sealed proposals for constructing a coal storage and handling plant at the navy yard, Portsmouth, N. H., and for furnishing a 120-ton floating derrick for the navy yard, Norfolk, Va.

Until July 27 bids will be received by M. J. Endicott, Chief Bureau of Yards and Docks, Navy Department, for a 100 horse-power boiler and steel stack to be erected at the naval station, San Juan, P. R.

Contracts have just been placed for the equipment for the refrigerating plant which is to be built jointly in Jersey City by the Central Lard Company and Halstead & Co. Henry Floy of 220 Broadway is the consulting engineer on the work. Two 60-ton refrigerating machines have been purchased from the Isbell-Porter Company of Newark, N. J. The Babcock & Wilcox Company received the order for the boilers. There will be four, each being of 250 horse-power. The Phœnix Iron Works of Meadville, Pa., received the engine order, which called for two 120 horse-power tandem compound units direct connected to Bullock generators. The pumps were purchased from the Foster Pump Works of Brooklyn.

Woolston & Brew of 39-41 Cortlandt street, New York, and 34 Ames Building, Boston, have just been appointed sales managers for the New York and New England districts by the Ball Engine Company of Erie, Pa.

The Cleveland Pneumatic Tool Company have opened a New York office at 15 Cortlandt street, in charge of W. F. McGuire, where samples of their complete line of chipping, beading and calking hammers, long stroke riveting hammers, piston, rotary and breast drills are carried.

Iron and Industrial Stocks.

The strike in the rolling mills has been the overshadowing factor, and has led to some very heavy liquidation in U. S. Steel stocks on Monday and on Tuesday, London, curiously enough, taking a conspicuous part. To-day there was a sharp recovery under fairly heavy sales. The movement in the other stocks was in sympathy with the U. S. Steel stock, although some of them would at least temporarily be considerably benefited by any prolonged strike affecting their principal competitor.

	Bid.	Asked.
E. W. Bliss, common	145	152
E. W. Bliss, preferred	130	140
Cramp's Shipyard stock	83	85
Dominion Iron & Steel Company	31⅞	..
Empire Iron & Steel, common	4	5
Empire Iron & Steel, preferred	30	40
National Enam. & St., common	26	29
National Enam. & St., preferred	86	88
New Haven	4⅞	5
Otis Elevator, common	32	33
Otis Elevator, preferred	94	96
Pratt & Whitney, preferred	85	90
U. S. Cast Iron Pipe Company, common	34½	36
U. S. Cast Iron Pipe Company, preferred	31⅜	32⅛
U. S. Projectile	119	..
Va. C. I. & C., stock	9	10
Va. C. I. & C., bonds	44	48
H. R. Worthington, preferred	110	116
American Can Company, common	21⅝	22
American Can Company, preferred	70¾	71

The Colt's Arms Company.—The banking firm of Armstrong, Schirmer & Co. of Boston, Mass., have completed arrangements for the acquisition of the Colt's Patent Firearms Company of Connecticut. The Colt's Arms Company of New York have been organized, with $2,500,000 stock and $1,500,000 5 per cent. collateral trust bonds to purchase the $1,000,000 capital stock of the Colt's Patent Firearms Company. Of the new securities of the Colt's Arms Company, all the stock has been issued and $1,200,000 of the $1,500,000 collateral trust 5 per cent. bonds. The stock of the Colt's Arms Company has been placed with the American Loan & Trust Company, as trustees for the 5 per cent. collateral trust bonds. The purchase of the above company includes all the company's manufacturing property, land

bordering on the Connecticut River, a large wharf, storehouses, &c., and about $900,000 of cash and stock in process, of which $700,000 is cash on deposit with the various banks and trust companies in Hartford. Officers and directors have been elected as follows: President, John H. Hall of Hartford; vice-president, W. C. Skinner of Hartford; treasurer, F. A. Schirmer. The above, with Geo. E. Armstrong and J. F. A. Clark, constitute the Board of Directors. The officers constitute the Executive Committee.

A press dispatch from Denver, Col., dated July 13, states that the stockholders of the Colorado Fuel & Iron Company, at a special meeting held in that city, voted to increase the capital stock of the company from $25,000,000 to $40,000,000, and authorized the directors to issue $15,000,000 5 per cent. gold debenture bonds, convertible into common stock. Of the 250,000 shares of stock outstanding, 238,000 were represented.

Dividends.—The American Stoker Company have declared a dividend of 2 per cent. on their preferred stock.

The International Tin Engine Company have declared the regular semiannual dividend of 3½ per cent., as of August 10.

The Future of Acetylene Lighting.—I.*

BY GEORGE LANDIS WILSON.

"The best of prophets of the future is the past." So wrote Byron over 80 years ago. Others had expressed the same thought, and it has been well stated since, but the truth of the aphorism is more generally accepted to-day than ever before, and so it should not seem amiss if this discussion, in part, deals with ancient history.

Whatever may be said, the discriminating must note a paradox in the lighting industry. A new means of illumination serves to supplement or extend rather than destroy existing methods. Candles continue to be in large demand, even in cities with gas plants. Kerosene holds its own, and the use of electricity, particularly in arc lamps, has compelled neighboring shopkeepers to extend their lighting facilities and burn more of the old illuminants if they continue in the race for trade. Acetylene, by providing true, steady light, will compel the improvement of old methods, but cannot compass their downfall or abandonment. Even the daylight bringing prism window will bring about a demand for the proper artificial illumination of gloomy interiors where the light of day can never be directed. The same spirit extends to the home, factory and church—good, better, best, are relative terms, not absolute. The ideal is usually the unattainable, but every acetylene light placed in general use is a little step toward the milennium.

THE FIELD.

The field for acetylene is practically unlimited, and every day points the way to new spots that need but little cultivation to produce an abundant harvest in due season. For many years, perhaps always, the perfect conditions for the installation of acetylene apparatus will be found in isolated localities. With efficient, permitted generators large enough to light a small house, sold at $27 each "to the consumer," there are few farmers in the United States who cannot afford acetylene. Many of them will have it before many years elapse. The country storekeepers have been and are experimenting with various makeshifts, but this only proves that they are keenly alive to their need of better light, and those who are wise know that there can be no rest from this feverish search until they come into the acetylene fold. For many years acetylene must serve as the buffer between the dissatisfied user of gas or electricity from a central station and the more or less satisfied corporation striving to earn dividends. There will usually be little or no profit in this business, but there is often great glory. An exception may be made of those small towns where the autocrat in charge of the electric light plant runs his establishment according to rules and the calendar, ignoring the needs of his patrons. The inconvenience and loss in store or factory which result from the absence of electric lights (however excellent at night) on dark days and early evenings, as well as the annoyance in the home or entertainment hall which is deprived of current at an arbitrary hour each night, will become unpleasant memories when the rebellious victim rises in his wrath and installs acetylene, always ready to do his bidding.

AIDS THE DISPLAY OF GOODS.

Discriminating manufacturers and progressive merchants will come to realize that in many industrial operations and for displaying a large variety of goods the acetylene light is really indispensable. Electricity and mantles both fail to accomplish the wonderful results that follow the intelligent, expert application of this new, scarcely known servant.

The city home of luxury, hung with rich curtains and tapestries, adorned with frescoes or masterpieces of art, furnished with soft upholstery and rugs, offers an excellent opening for acetylene. Inquiry among owners develops the fact that the products of combustion from common gas often produce disastrous results in the destruction of these beautiful interiors. As a rule, the refuge of such a householder is electric light, which as usually furnished is utterly unfit for use as a reading or working light in the home. These men need light, can afford to pay for it, and when they appreciate the situation, will have acetylene.

Students and elderly people whose eyes are impaired by long straining under dim or unsteady lights make up another class of future users of acetylene, whether in or out of town. In many instances a small generator furnishing a few lights for a special purpose will be the forerunner of a complete surrender by its devotees—won over by a rare combination of beauty and utility.

Apart from the lighting of ordinary interiors, special applications of acetylene will cut no small figure in its introduction to general use. The phenomenal diffusive quality of this light will cause it to be adopted in every compactly arranged village as the only illuminant for streets and other public purposes.

FOR LIGHTHOUSES AND SIGNAL WORK.

Experiments now complete have proven the usefulness of acetylene for lighthouses, range lights and beacons, for which it is admirably adapted, not only on account of the penetrating qualities of the light, but also because it is feasible to maintain lights at points difficult of access by making monthly visits at opportune times, avoiding the daily attendance which too often involves loss of life and interruption of the service. Akin to this is the application of acetylene to searchlights and signals, which will reduce the perils of navigation on inland as well as salt water. On land, too, such lights have their place, and will be applied to advertising, display and show purposes as soon as opportunity is given to prove their effectiveness. The acetylene stereopticon has become an every day article of sale, and the day may not be far off when moving pictures will be projected with the new light.

The actinic value of acetylene very early commended it to the use of photographers, who as they come to fully understand and appreciate how useful it really is will follow their more progressive brethren and adopt it. There is no light so good for enlargements and some classes of commercial work, still its application in this direction has scarcely commenced.

Owing to its accuracy the acetylene light lends itself readily to examinations by physicians, surgeons, dentists and other professional men. Whatever lights may be in common use, the future will find every complete operating room equipped with acetylene. It will be found especially desirable in hospitals where emergency work is certain to demand instant attention, sometimes at hours most inopportune. If an acetylene generator is used, the wires will never be down nor a fuse burned out, the engineer will not be off nor the mantles or glassware broken, but the little lighting plant entire may be placed completely under the control of those in the operating room, ready for immediate service.

In horticulture and similar pursuits acetylene light will be utilized experimentally and commercially in forcing.

(To be continued.)

*A copyrighted paper read at the meeting of the International Acetylene Association at Buffalo, N. Y., June 18, 1901.

Trade Publications.

Boring and Turning Mills.—The Betts Machine Company, Wilmington, Del., have prepared a handsome catalogue dealing with their several types of boring and turning mills. Their 10-foot mill swings 10 feet 4 inches diameter and takes in work 62 inches under the tool holders and 69 inches under the cross rail. The table is 78 inches in diameter, has 30 changes of speed, and is driven by a cone of large diameter with a wide belt and powerful gearing. It is mounted on a spindle having large bearings, with suitable adjustment for wear, and is also provided with annular bearing on the bed, which is automatically lubricated. The cross rail is elevated by power and is provided with two spindles cut right and left for close work. Either spindle may be moved to the center for boring. The tool spindles have a traverse of 36 inches and have a rapid movement and a counterbalance.

Fire Brick.—The Chicago Fire Brick Company, 518 Chamber of Commerce Building, Chicago, manufacturers of fire brick, and who also carry a full line of foundry facings and supplies, have issued a catalogue containing complete illustrations of the various sizes and shapes of fire brick which they are prepared to furnish. The company's products cover all classes of special shapes for lining blast furnaces, cupolas and steel furnaces.

Air Compressors.—The New York and Franklin Air Compressor companies of 95 Liberty street, New York, and Franklin, Pa., have sent us a catalogue dealing with their air compressors actuated by steam, belt, gearing, electricity or water. These compressors are built in several different types and in capacities adapting them for pneumatic tools in shops, rock drills, mining machinery, sinking bridge caissons, pumping water by compressed air, and for every other service to which compressed air may be applied.

Steel Rolling Doors, Shutters and Partitions.—The steel rolling doors, shutters, &c., made by the Kinnear Mfg. Company of Columbus, Ohio, are dealt with in a catalogue which presents many photographs of buildings which have been equipped by the company. In the car house of the Worcester Consolidated Street Railway there is the largest door of its kind ever constructed, covering an opening 35 feet 6 inches wide by 20 feet high. This door is operated with the greatest ease. Its weight when ready for installation was approximately 7000 pounds, and this load is perfectly balanced in any position.

The Brown & Sharpe Mfg. Company of Providence, R. I., under the title "Here and There in Our Shops," have issued a very attractive pamphlet which presents, first, an excellent bird's-eye view of their plant, followed by various engravings taken in the different departments.

Pamphlets have been received from the Long Distance Steam Carriage Company of Washington, D. C., describing their engines adapted for yachts and automobiles.

We have received a catalogue from E. H. Tichener & Co., Binghamton, N. Y., describing their grills, elevator cars, bank rails, wickets, iron fences, gates, &c. The designs presented are extremely attractive.

A pamphlet from the Jeanesville Iron Works Company of Jeanesville, Pa., describes their steam and electric sinking pumps. These pumps are built with three single acting plungers operated from a common crank shaft, the crank pins of which are spaced equidistant. The water cylinders are cast in one piece, and are connected to the guides by hollow castings, which form a vacuum chamber on one side and an air chamber on the other. These pumps are sold with a guarantee against all breakages and repairs.

The Union Steam Specialty Company of Scranton, Pa., have issued a catalogue of their separators, oil extractors and furnace blowers. The company desire to secure sale agencies in large cities.

A new catalogue of steam pumps has been prepared by the Scranton Steam Pump Company of Scranton, Pa.

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OBITUARY.

RICHARD HECKSCHER.

Richard Heckscher, a widely known and pioneer anthracite coal operator and for many years president of Richard Heckscher & Sons Company, iron manufacturers, died on July 10 at his home in Philadelphia, after a long illness. He was born in Hamburg, Germany, in 1822, of distinguished parentage, and after serving in banking houses in Hamburg and Germany came to America in 1842. In conjunction with the late Charles A. Heckscher he became largely interested in the development of anthracite mines in Eastern Pennsylvania. As president of the New York & Schuylkill Coal Company and manager of the Forest Improvement Company, he developed and operated numerous collieries at Heckscherville, Thomaston, Forestville, Minersville and other points. Subsequently he opened the Kohinoor collieries at Shenandoah, Pa. He introduced many original designs and mechanical devices of great value in anthracite mining, and to a great extent revolutionized the method of conducting these operations by the originality and perfection of his system and organization.

Mr. Heckscher was for many years president of the Lehigh Zinc & Iron Company of Bethlehem, and of Richard Heckscher & Sons' Company, whose blast furnaces are at Swedeland, Pa. Mr. Heckscher was a man of great force of character and of a wide grasp of affairs, and was noted throughout his life for his unswerving probity and kindliness of heart.

NOTES.

GENERAL BENJAMIN CHEW TILGHMAN of the firm of B. C. & R. A. Tilghman of Philadelphia died on July 3 at his residence in that city, aged 80 years. General Tilghman was a native Philadelphian and devoted himself to scientific research and invention, the sand blast machine which bears his name having formed the foundation of the well-known firm of B. C. & R. A. Tilghman, in which his brother, the late Richard A. Tilghman, was a partner. He was brevetted brigadier-general for distinguished services in the Civil War.

WALTER MILNER, secretary, treasurer and manager of the J. V. Milner Hardware Company, Bloomington, Ill., was drowned at Bloomington, July 3, while trying to save a young man he was teaching to swim. Mr. Milner was about 30 years old. His business career commenced with Hunter & Strehlow, Peoria, Ill., where he remained four years; then going with Russell & Erwin Mfg. Company for two years, when he became the hardware manager of May & Thomas Hardware Company, Birmingham, Ala., where after two years' service he with his father about three months ago started the J. V. Milner Hardware Company.

WALWORTH O. BARBOUR, senior member of the firm of Barbour, Stockwell & Co., iron founders and machinists, of Cambridge, Mass., died July 2 at the McLean Hospital, Boston, after a long illness. He was born in Saratoga, N. Y., about 50 years ago, and first started in business with the Walworth Mfg. Company. The firm of Barbour, Stockwell & Co. were formed over 20 years ago.

FRANK J. PATTERSON, vice-president of the National Cash Register Company, died at Dayton, Ohio, July 6. Mr. Patterson was formerly a coal operator in Southern Ohio, but for many years past had been engaged in the manufacture of cash registers.

CARLISLE MASON, for many years president of the Excelsior Iron Works, Chicago, died from the effects of a fall on the 6th inst. Mr. Mason was 84 years of age, was born in Scotland and emigrated to Chicago in 1842. The Excelsior Iron Works in the early days of Chicago became famous throughout the West in furnishing the iron work for large undertakings.

WILLIAM WALLACE TUCKER, well known as an inventor of mechanical appliances, died July 7 at his home in Hartford, Conn., of Bright's disease at the age of 63 years. For 37 years Mr. Tucker was in the employ of the Pratt & Whitney Company, for a large part of that time being foreman of the machine screw department. In 1898 he went into business for himself, forming the Tucker Supply Company, who manufacture mechanical specialties.

WILLIAM S. SPOFFORD, head of the firm of William S. Spofford & Son, manufacturers of tubing and mill supplies, Providence, R. I., died July 4 at his home in that city from heart disease, superinduced by the intense heat. Mr. Spofford, who was 57 years of age, was born in Leeds, England, and came to this country 30 years ago.

W. E. FITZGERALD, one of the officers of the American Shipbuilding Company at Milwaukee, Wis., died on July 7, as the result of injury from an explosion of acetylene gas at his summer home at Nagowicka, Wis.

WILLIAM J. EARLY, head of the firm of W. J. Early & Sons, foundrymen, of Pittsburgh, died June 28 at his home on the South Side after an illness of two months. Mr. Early was a native of Butler County and went to Pittsburgh 36 years ago. He was for many years a foreman in the foundry department of Jones & Laughlins' mill. About 12 years ago he went into the foundry business for himself with his two sons, under the firm name of W. J. Early & Sons.

JOHN A. SLATER, superintendent of the Norwalk Iron Works, died suddenly on July 13 at South Norwalk, Conn., aged 65 years. He was a native of Portchester, N. Y.

SAMUEL BAUER of the firm of Hilb & Bauer, wholesale iron and metal dealers of Cincinnati, Ohio, died at his residence in that city from stomach trouble, superinduced by the intense heat. Mr. Bauer was born in Eschelbach, Germany, in 1845, and came to this country when a boy. He founded the firm of Hilb & Bauer 30 years ago in Cincinnati, where he was well known in the iron trade.

CHARLES E. DERLEY, of the firm of Derley & Weatherby, machinists, of Camden, N. J., died July 12 at his home in that city, aged 74 years. He was born in Waltham, Mass., and had been engaged in business in Camden since 1851.

DAVID UZAL CORY died suddenly of heart failure at the residence of his brother-in-law, in Englewood, N. J., early on the morning of July 13, aged 52. Mr. Cory was the head of the house of Uzal Cory & Co., who engaged in the manufacture of hot air furnaces in the early "forties," and who were largely instrumental in establishing this important industry.

CHARLES A. SPRING, a partner of the late Cyrus H. McCormick and formerly manager of the McCormick Harvester Company, died July 16 in Chicago, aged 75 years. He was born in Boston and went to Illinois in 1837.

The fire loss of the United States and Canada for the month of June, as compiled by the New York *Journal of Commerce*, shows a gratifying decrease as compared with the figures of the preceding months of this year, being $9,599,000, as against $22,380,000 in the preceding month, and $21,281,000 in June, 1900. The total loss for the first six months of the year, however, is very heavy, aggregating $88,935,000.

A New Process noiseless pinion and cut cast iron mate have recently been shipped to Glasgow, Scotland, by the New Process Raw Hide Company, Syracuse, N. Y. They are to be used in connecting an electric motor to a Babcock printing press in use at the Glasgow Exhibition.

The American Sheet Steel Company have recently purchased about 700 acres of coal lands located near their Ætna Standard Works, at Bridgeport, Ohio. The land adjoins 600 acres bought by the same concern recently.

The Boston Manufacturers' Mutual Fire Insurance Company of Boston have issued an interesting circular descriptive of fire apparatus.

HARDWARE.

THE Industrial Commission are instituting an inquiry which, if frankly and fully answered, should yield much interesting and suggestive information. They are addressing circulars to manufacturers relating especially to the way in which their foreign prices compare with their domestic. It is sent out in view of the frequent assertions that exporters of American goods often sell them at lower prices in foreign markets than are obtained for them in the home markets. It is generally understood in trade circles that there is substantial ground for this impression, and if the manufacturers give the facts in the case and the reasons for the course they pursue, the commission will have a mass of material reflecting trade practices and conditions. The extent to which manufacturers will be willing to reveal matter of this kind, which is of a very confidential nature, remains to be seen.

There is no doubt on the part of the trade and of the public at large a very general feeling that the giving of lower prices to foreign buyers than to those in this country is unfair to the home trade, and unreasonably discriminates against the home market, which from its importance should be entitled to the better treatment. This feeling is especially pronounced in the case of combinations where relatively high prices are maintained for domestic buyers, while for the foreign trade a materially lower schedule of prices is established, if, indeed, the foreign market be not left entirely open.

Advices from different sources indicate the vigilance with which customs officials in Europe are applying their tariff regulations to American goods, with a view apparently of limiting the importation as much as possible. An example of this is given in the recent report from our Consul-General at Berlin, which is referred to in another column. A Harness Snap which had previously been imported as an iron or steel article was found on examination to contain a minute brass spring, and on this account was made subject to the duty on brass goods, which more than doubles the charges. Similarly Ice Cream Freezers under a new classification are made subject to three times as much duty, as a result of being classified as Wooden Ware in combination with iron, instead of Iron Ware in combination with wood. These changes, while not of themselves of great importance, are causing some disquietude and inducing caution among German importers as well as American manufacturers. These decisions may be regarded simply as shots along the skirmish line, and are chiefly significant as illustrations of the attitude toward American products.

There have recently been a remarkable number of accessions to the ranks of the jobbing trade. We do not refer to the establishment of large houses whose principal, if not exclusive, business is wholesale. We have in mind the fact that many retail houses are announcing their entrance into the wholesale field, for the cultivation of which they are putting on the road one or two travelers, and in one way or another preparing to sell goods through the trade on a larger or a smaller scale. This is undoubtedly evidence of enterprise and prosperity. It indicates the reaching out on the part of merchants who are doing a good business for still larger trade and a wider field.

It is not unlikely, too, that the desire of retail merchants of good standing to be ranked as jobbers that they may be able to buy more advantageously has something to do with the matter. This is especially the case in view of the many lines of goods in which there is a marked differential in price between the jobbing and the retail trade. Many of the larger retail merchants are dissatisfied with a classification with the mass of retailers, according to which they should be charged the regular prices to that class of merchants, instead of buying, as they have usually done, at figures which closely approximate those given to the jobbers. By adding a jobbing department to their business, even though on a small scale, their position in the matter of prices is made decidedly more advantageous. There is no doubt that the increased use of classified lists of buyers is having a direct influence among the more progressive and enterprising merchants in stimulating efforts to secure a grading which will enable them to buy at such prices as their position in the trade and the quantity of goods purchased entitle them to.

Condition of Trade.

There have been thus far very few changes in price during the present month. There has been especially very little new in the way of announcement of revised list prices. Some revised discount sheets have been issued and others are to be expected. Many minor changes have been made by manufacturers in preparing for the fall business, but, as a rule, prices are without important modification. The tone of the market generally is decidedly firm. In some lines a strong and confident feeling prevails. The strike among the Steel workers naturally attracts the attention of all branches of the trade, and it is recognized that much depends on the course things may take. A possible shortage of material is one of the results which is apprehended if the contest is of long continuance. In this case inconvenience will be caused manufacturers and the trade, and possibly higher prices in some lines may develop. Business throughout the country continues to move along in excellent volume. Manufacturers are beginning to send out travelers and are receiving their first reports, which are said to indicate a very satisfactory condition of things. The jobbing trade are preparing for a large business, and in some lines have been placing their orders a little earlier than usual. The smaller trade are generally doing a good business. Notwithstanding the damage caused to the crops by the drought, the prevalence of which it is hoped has been broken, the crop conditions are unquestionably on the whole favorable, and a basis for substantial prosperity throughout the country at large is thus laid. There is little ground for special complaint in regard to collections. Altogether, the situation continues satisfactory and the outlook promising.

Chicago.

(By Telegraph.)

The volume of business in Shelf Hardware continues remarkably heavy. Jobbers found their facilities taxed to the utmost the past week in getting out orders. It is believed, however, that some shrinking may be expected from this time. Traveling salesmen are beginning to take vacations, and the drought will probably cut off some trade in the most affected sections. A very serious disturbing element is the strike in the Sheet and Tin Plate mills. This will undoubtedly curtail business by cutting off the supply of various products. Stocks of Sheets are small and almost no Tin Plate is on hand in local warehouses. Manufacturers of Stamped and

Japanned Goods are refusing to receive carload orders and will only take orders for small lots subject to the condition of their stock. It is known that many manufacturers of Stove Pipes, Coal Hods and other cold weather goods are short of stock and will be unable to continue manufacturing operations. The canning season is at hand, and it is likely that the stock of cans will be heavily cut down if the strike continues. It is unfortunate for the Hardware trade that the strike has come at a time when no reserved stocks are held, either in raw material or manufactured goods. Manufacturers have reaffirmed the price of Door Hangers and Track Rail for 60 days.

St. Louis.

The activity of the Hardware trade at the present time is remarkable in spite of the extreme heat which has prevailed in this section during the last few weeks. The demand for seasonable goods shows no signs of abatement and they are meeting with an extraordinary demand for the time of year. The heavy demand for Binder Twine continues. The sale of Refrigerators, Freezers and similar goods has been unusually large, the manufacturers having been unable to meet the demand with anything like prompt shipments. There is still a scarcity in Wire products, and a large demand for Screen Goods in particular. Builders' Hardware is also extremely active for this season and has every indication of continuing through the building season. Heavy Hardware jobbers report a strong demand for everything in their line. The outlook for business is very encouraging for all branches of the Hardware trade.

Baltimore.

CARLIN & FULTON.—This month is generally a quiet one, being devoted to vacations and to preparations for the approaching season. However, comparatively speaking, there seems to be a fair amount of business going on all the time.

Refreshing rains have followed the intense heat of some days ago, and the farming community will be greatly benefited thereby.

Our men in the cotton States report that on account of the backward condition of that staple the trade are buying very conservatively, and business this year will not be as early as usual.

What effect labor troubles will have here upon the supply and prices of goods remains to be seen, but the indications are that the unsatisfactory conditions which have so frequently and generally applied to the shipment of goods during the last six months or more will be increased, to the great annoyance of trade everywhere.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—There is a fair amount of trade being done through the few salesmen on the road, and a fair amount of mail orders are daily being received. It is, however, safe to say that this is the quiet season of the 12 months of each year. In other words, during the middle of July less trade is anticipated than during any other month in the calendar year. This is for the reason that more travelers are off the road then than at any other time, unless it be the holiday season, the last week of the year. The salesmen being off the road gives opportunity for the yearly vacation which is customary in our city.

Stocks are being prepared for the fall trade. Owing to the scarcity of many kinds of goods during the last six months, buyers of jobbing houses, as a rule, have been ordering earlier in the season than customary, and instead of having goods come in August 1 to September 1, they have been ordering goods during the last two months to come in early in July. Taking our own case as an illustration, our stock clerks are unable to leave on their vacations. They are compelled to defer their vacations from two to three weeks, owing to the large stock of merchandise coming in, which ordinarily would have been ordered in at intervals during the next 60 days. Therefore, it is fair to presume that jobbers will start out with a well equipped stock, which they have secured with the utmost effort during the last 30 days.

The strikes will naturally affect that class of goods which are manufactured by the organizations which are now in conflict with the strikers. What the results will be time alone can tell.

The conflicting reports concerning the crop prospects as a whole do not look discouraging for a yield above the average in both corn and wheat. One cannot tell, however, at this early date.

There is a feeling of confidence in trade circles, notwithstanding the scarcity of money and the irregular stock quotations which are now in process in Wall street.

Taking everything into consideration, prospects are fair.

Louisville.

W. B. BELKNAP & Co.—Business continues excellent in all lines. There is a wonderful demand for stock. Of course, if it blows hot or blows cold over night somebody has a fever or has a chill and thinks there is not going to be enough cotton or enough corn to go around for people and for pork, but despite the freaks of the thermometer, we manage to pull through and give the newspapers something to talk about every day.

Of course, what is watched just now with great interest, particularly by students of economic questions, as well as those engaged in trade, is the handling of the labor problem in the iron mills, which requires especial attention in midsummer. The immediate adjustment of it had been predicted by the optimistic press and observers, but the day of the conference was an especially hot one, and we have never known agreements to be readily made when the thermometer was above 90. Whether the superficial irritation which comes with these high temperatures "strikes in" and conveys itself to the mind and is responsible for the maintenance of antagonisms we cannot say, but, at any rate, we make this contribution to the cause of economic science with the hope that it will be worth something to the future college lecturer.

The Republic and independent mills are busily at work and their product is not insignificant. But the special grades of material, such as the Hoop Company and the Steel Sheet Company supply their customers, may be scarce for a while. Barb Wire, and especially baling sizes of Annealed, are in scant supply. Shipments from factories are delayed.

Railroad earnings continue good, collections fair. There has been so much speculation of various kinds in different parts of the country that some money has been used up in that way which ought to have been devoted to the paying of merchandise bills. A few extra pumps may be engaged after a while to furnish the requisite cold water for the enlarged heads after the numerous oil gushers, which are being advertised all over the country, have been properly sized up or sized down to their true proportions.

New Orleans.

A. BALDWIN & Co.—Business has been much more active than we anticipated, and, notwithstanding we looked for our usual midsummer dullness, orders are still coming in very freely and in the aggregate amount to considerable.

The excessive hot spell has evidently injured the crops to some extent, and while a few country merchants are canceling orders, it does not affect the general situation to any very great extent. With good heavy rains in the near future, prospects of a magnificent fall trade in the Southwest were never brighter.

Collections are fair and prices are being very well maintained, and, taken altogether, the situation is very satisfactory.

Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—The weather during the past two weeks has been the principal topic of conversation—the heat has been something intense. On July 11 all previous records were broken, the thermometer registering 103 in the shade. The protracted drought is also beginning to be a rather serious question and it is probable that the corn and cotton crop will be considerably injured by it. Most of the wheat has been

cut and threshed, and the yield was above the average for this State. Very little wheat is being marketed and the majority of farmers seem to be holding for higher prices. Good No. 2 wheat is selling at about 60 cents per bushel in this city.

The Hardware trade continues excellent for this time of the year. Orders are numerous and increasing in size. Prices are being well maintained. Collections are fair and indications for a large fall business are very flattering.

Portland, Oregon.

CORBETT, FAILING & ROBERTSON.—For the cereal year ending June 30, Portland exported 17,706,102 bushels of wheat; San Francisco, 15,888,044; Tacoma and other Puget Sound points, 14,023,036—a good showing considering that the Willamette Valley tributary to us had almost a failure of crop. We will make a much better showing the coming year, as crop prospects were never brighter at corresponding date.

Hops, another of our staples, as we lead every other State in the Union in bales produced, promise a big yield at satisfactory prices.

Timber lands are still on the boom and Eastern buyers are taking all they can get at prices paying an enormous profit to those who got in on the ground floor. Still the present buyers will make a much larger profit, as all begin to realize that the Oregon pine, standing 6,000,000 and 8,000,000 to the 160 acres and taking 200 to 300 years in growth, is something that cannot be replaced.

Above conditions account in part for the satisfactory business now in hand and are a bright augury for the future.

San Francisco.

MILLER, SLOSS & SCOTT.—It is now the commencement of harvest time with us, and all looks well toward the country's producing more than the average.

The foundries, machine shops and shipyards of the city are all tied up, owing to the machinists' strike, and a very considerable trade is affected thereby.

There are more buildings going up this year than last, and Building Hardware, as a consequence, is more in demand.

The Fishing and Sporting Goods lines are active at present, as their season is now on.

Taken altogether trade conditions are good, although collections are slow, as they are always at this time of the year.

NOTES ON PRICES.

Wire Nails.—The Wire Nail market continues in about the same condition as reported last week. Competition has not affected the general market as yet. Mills manufacturing both Wire and Cut Nails have the advantage of being in a position to ship mixed cars. Pittsburgh quotations remain unchanged, as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots	$2.30
To jobbers in less than carload lots	2.35
To retailers in carload lots	2.40
To retailers in less than carload lots	2.50

New York.—Some improvement in the local demand for Wire Nails has been noticed during the week. Quotations are as follows:

To retailers, carloads on dock	$2.53
Small lots at store	2.60

Chicago, by Telegraph.—While the supply is becoming more plentiful and mills are able to make prompt delivery, the demand for Wire Nails keeps up wonderfully well, being greatly in excess of the same season in previous years. The competition among manufacturers is growing, but has not yet reached the point of causing any change in prices. Jobbers report business as remarkably heavy in volume. Carload lots are quoted at $2.45 and small lots at $2.55, with a concession to $2.50 to best buyers.

St. Louis.—The demand for Wire Nails continues to be fair, being especially good for this season. Prompt shipments are being made, and prices are maintained. Jobbers quote carload lots to retailers at $2.50, base, and less than carloads at $2.55 to $2.60.

Pittsburgh.—There will be a material increase in production of Wire Nails in a short time, and already two large interests, the Sharon Steel Company, at Sharon, and the Union Steel Company, at Donora, are taking orders for Wire Nails. The increase in capacity of independent mills for the manufacture of Wire and Wire Nails has been enormous in the past year, and probably larger than in any other branch in the Steel trade. Owing to this heavy increase in production buyers of Wire Nails are apprehensive that prices may possibly be lower, and for this reason are placing orders mostly for small lots, not caring to accumulate stocks. It is intimated that some of the new concerns are making slight concessions in prices. With present conditions buyers see no incentive to buy ahead, and demand is likely to continue light for some time. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots	$2.30
To jobbers in less than carload lots	2.35
To retailers in carload lots	2.40
To retailers in less than carload lots	2.50

Cut Nails.—The demand for Cut Nails is moderate, keeping up to about former proportions. Quotations are as follows, f.o.b. Pittsburgh, plus the actual freight to point of destination, terms 60 days, or 2 per cent. off in 10 days:

Carload lots	$2.00
Less than carload lots	$2.05 to $2.10

New York.—The local Cut Nail market is somewhat firmer, the minimum price being referred to as $2.18 from store. Prices range from this figure to $2.20 to $2.25, according to customer and quantity. New York quotations for carload and less than carload lots are based on the above prices, to which Pittsburgh freight has been added:

Carload lots on deck	$2.13
Less than carload lots on dock	2.18
From store	$2.18 to 2.25

Chicago, by Telegraph.—The quantity of Cut Nails handled in this territory shows very little change from week to week. The consumption seems to be in well defined lines. Small lots are held at $2.35 from stock.

St. Louis.—There is nothing of interest to note in the Cut Nail market. Demand is fair at $2.30 to $2.35, base, for small lots from store.

Pittsburgh.—While June prices of Cut Nails have been reaffirmed for July delivery, yet there is a good deal of irregularity in prices, and it is reported that concessions are being made both by the mills and by jobbers. Affairs in the Cut Nail Association have not been running smoothly for some time. We quote, f.o.b. Pittsburgh, plus the actual freight to point of destination, terms 60 days, or 2 per cent. off in 10 days:

Carload lots	$2.00
Less than carload lots	$2.05 to 2.10

Barb Wire.—Stocks of Barb Wire in jobbers' hands are generally low. Demand keeps up in unexpected volume. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots, Painted	$2.60
To jobbers in carload lots, Galvanized	2.90
To jobbers in less than carload lots, Painted	2.65
To jobbers in less than carload lots, Galvanized	2.95
To retailers in carload lots, Painted	2.70
To retailers in carload lots, Galvanized	3.00
To retailers in less than carload lots, Painted	2.80
To retailers in less than carload lots, Galvanized	3.10

Chicago, by Telegraph.—Manufacturers state that if no further orders should be received for Barb Wire they would go into September with no stock. Demand, however, keeps up and is a constant cause of surprise to veterans in the trade, who are unable to comprehend it. Jobbers are without stocks and are being steadily urged by customers to make more strenuous efforts to supply their needs. Carload lots are quoted at $2.75 for Painted and $3.05 for Galvanized. Less than carloads are quoted at $2.85 and $3.15 respectively, with a shading of 5 cents to the best trade.

St. Louis.—The condition of the Barb Wire market re-

mains unchanged. Stocks are very low and but little improvement can be looked for as great scarcity prevails. Prices are firmly maintained. Jobbers quote carload lots of Painted at $2.85 and Galvanized at $3.15. Less than carload lots are quoted at $2.95 for Painted and $3.25 for Galvanized.

Pittsburgh.—Demand has fallen off to some extent and mills are catching up with back orders. The tone of the market is firm. For domestic trade we quote: Galvanized Barb Wire, $2.90, in carload lots to jobbers, and Painted, $2.60. Terms 60 days net, 2 per cent. discount for cash in 10 days, f.o.b. Pittsburgh.

Plain Wire.—Manufacturers are still unable to satisfy the demands of the trade with prompt shipments of Plain Wire. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. off for cash in 10 days:

	Base sizes.	
	Plain.	Galv.
To jobbers in carload lots	$2.25	$2.65
To jobbers in less than carload lots	2.30	2.70
To retailers in carload lots	2.35	2.75
To retailers in less than carload lots	2.45	2.85

The above prices are for the base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances.

Nos.						Galvanized
6 to 9	Base.					$0.40 extra
10	$0.05	advance	over	base		.40 "
11	.10	"	"	"		.40 "
12 and 12½	.15	"	"	"		.40 "
13	.25	"	"	"		.40 "
14	.35	"	"	"		.40 "
15	.45	"	"	"		.75 "
16	.55	"	"	"		.75 "
17	.70	"	"	"		1.00 "
18	.85	"	"	"		1.00 "

For even weight bundles, 50 pounds and over, 5 cents per bundle advance on above.

Chicago, by Telegraph.—The Plain Wire market continues in practically the same condition as previously reported. Manufacturers are still considerably in arrears on shipments while jobbers are unable to satisfy customers. Carload lots are quoted at $2.40, base, and small lots from stock at $2.50, with $2.45 quoted to the best trade.

Pittsburgh.—Demand for Plain Wire continues large and the mills are still considerably behind in deliveries. For domestic trade we quote:

	Plain.
To jobbers in carload lots	$2.25
To jobbers in less than carload lots	2.30
To retailers in carload lots	2.35
To retailers in less than carload lots	2.45

Galvanized Wire up to No. 14 is 40 cents advance on Plain; Nos. 15 and 16, 75 cents advance, and Nos. 17 and 18, $1 advance. Terms are 60 days net, with 2 per cent. off for cash in 10 days, f.o.b. Pittsburgh.

Pumps.—The market for Cistern Pumps, Pitcher Spout Pumps, &c., is in a much better condition than for some time. The arrangement recently entered into by the manufacturers by which advanced prices have been established is said to be working satisfactorily. Present prices are represented by the following discounts:

Cistern Pumps, Iron	60 %
Pitcher Spout Pumps, fitted for iron Pipe	75 %

The manufacturers refer to the prices which have recently been ruling as unremunerative, and allude to the condition of the market as justifying the advance which has been made.

Shot.—The Shot market is characterized by more regularity than for some time, and the base price of $1.50 for Drop Shot up to B is announced by substantially all the manufacturers. The combination which has been formed is referred to as in excellent control of the market. A trade discount on ton lots of 5 cents per bag is made, with 2 per cent. discount for cash in 10 days.

Roofing and Building Papers.—Manufacturers of Tarred Roofing and Building Papers are fairly full of business along the whole line. Prices are in general pretty well maintained, although there is no trouble in getting the goods. On business in carloads there is some shading to close buyers.

H. B. Ives Company.—H. B. Ives Company, New Haven, Conn., are issuing the following revised discounts on their line of Door Bolts, Sash Locks, Sash Lifts, &c., terms 60 days net, or 2 per cent. discount for cash in 10 days:

	Discount.
Window Ventilating and Mortise Door Bolts	60 %
Sash Locks, Wrought Steel, also with Bronze Metal Knob	60 %
Sash Locks, Wrought Bronze and Brass Metal	55 and 5 %
Sash Locks, Cast Iron, also with Bronze Metal Knob	65 %
Sash Locks, Cast Bronze and Brass Metal	62½ %
Ives Patent Window Stop Adjusters	25 and 5 %
Sash Lifts, Wrought Metal	40 %
Sash Lifts, Cast, and Shutter Bars	45 %
Taplin's Perfection Window Stop Adjusters	25 and 5 %
The Crescent Sash Fastener	50 %

Glass.—Demand for domestic Window Glass from jobbers continues light. Imported Glass is confined to that suitable for use by picture framers and for dry plates, &c. Foreign Glass is thinner than the domestic product and for general uses there is little demand, as consumers have become accustomed to and prefer the domestic product. Even if there was a demand for foreign Glass for general purposes it is stated that at least three months must elapse before foreign makers would be in a position to import sufficient quantities to affect the market. Jobbers' quotations for domestic Glass are as follows:

	Discount.
Less than car lots, from store	80 and 20 %
Carloads, f.o.b. factory	85 and 5 %

Paints and Colors.—*Leads.*—Demand for Lead in Oil is comparatively light, both on account of the season and the high price of Linseed Oil. No change in quotations has been made, but some irregularities in prices are reported, especially for large orders, as to make, &c. Quotations are as follows: In lots of 500 pounds and over, 6½ cents; in lots of less than 500 pounds, 7 cents per pound.

Oils.—*Linseed Oil.*—The price reached by Linseed Oil is the highest for a number of years. There are intimations of a further advance, but this rumor is not officially confirmed. There is little Oil offered for sale outside of the controlling interest. Demand is for sufficient for immediate requirements, and is growing somewhat less. With the advent of the new crop of Flaxseed it is anticipated that lower prices for Oil will rule. Quotations are as follows: City Raw, 82 cents per gallon in lots of five barrels or more; 83 cents in lots of less than five barrels. State and Western Raw Oil, 80 to 81 cents, according to quality. Calcutta Raw Oil, 85 cents per gallon. Boiled Oil, 2 cents per gallon advance on Raw.

Spirits Turpentine.—The local market has been quiet during the week, with a comparatively light demand. Prices for Turpentine are steady, according to quantity, at 37 to 37½ cents for Southerns, and 37½ to 38 cents per gallon for machine made barrels.

THE New York branch of the Joseph Dixon Crucible Company, 68 Reade street, has just been thoroughly overhauled and renovated, even to new fronts, signs, &c. Inside a new metal ceiling, tinted in colors, has been put, a new system of electric lights installed, and the interior painted and renovated throughout.

The city of Fargo, N. D., was nearly wiped out by a conflagration on June 7, 1893, the loss exceeding $3,500,000. To signalize the fire and the wonderful recovery and growth of the city a great fire festival was held there on the 5th, 6th and 7th ult. In connection with the festival an attractively printed souvenir was issued, in which references are made to the resources and development of the State and some interesting facts concerning the city of Fargo. Special mention is also made of the commercial interests of the city, among which is a reference to the Hardware establishment conducted by Hubert Harrington, whose handsome and unique parade float is illustrated.

Notes on Foreign Trade

BRITISH LETTER.

Offices of *The Iron Age*, Hastings House, Norfolk Street, London, W. C.

The Proposed Association.

THE response made to the suggestion that there should be an American importers' association in this country is very gratifying. Among those who have already expressed approval and willingness to cooperate are Col. Millard Hunsiker, chairman of the London Board of the United States Steel Corporation, and with him many of the managers of the subsidiary companies. Charles Churchill of Charles Churchill & Co., Limited; Warren D. Rollins of John G. Rollins & Sons; Albert Brown of Brown Bros.; A. K. Baylor, T. Charles Cole of the American Wringer Company; James L. Pollitt of the Bissell Carpet Sweeper Company; J. Friedenstein of the South British Trading Company; Clark W. Harrison, agent for the United States Cast Iron Pipe & Foundry Company; Theodore Butler of the Whitman & Barnes Mfg. Company; A. S. King of the National Enameling & Stamping Company; Walter P. Notcutt, J. Toscani of American Crucible Steel Company, and others. Hitherto the proposal has not gone beyond those concerned with American metal goods and machinery, but it is felt by some of those with whom I have discussed the matter that it would be better to widen the borders and constitute an American Chamber of Commerce in London, so that all those who import American goods of any description might have the benefit of the work of the association. Efforts in this direction have been made from time to time, and I understand that F. C. Van Duzer, the honorary secretary of the American Society in London, has been working at this idea for some little time past. It would, of course, be unwise and possibly disastrous to have two American commercial associations working along similar lines, so that the next step to be taken is to arrange matters on a satisfactory basis for all business Americans in Great Britain.

Field and Garden Tools.

The trade in Machine Knives, Reaper Sections, Beater Bars, and other parts of agricultural and food preparing requisites has turned out better than was anticipated, the demand in Sheffield for all this class of goods being unusually brisk. The hay harvest is very late this year, and has interfered with the sale of Reapers and Rakes, but a steady business is being done in both large and small Knives for all kinds of agricultural implements.

Sheffield Forks and War Office Orders.

There has been a great disturbance in Sheffield over a dispute in the Sheffield Fork trade. In February the Fork makers asked the manufacturers for an advance, basing their request on the activity in trade caused by the Government demands on account of the South African war. Negotiations came to a deadlock, and finally the manufacturers induced the War Department to order a stamped Fork instead of the ordinary hand made Fork. Recently a deputation of the hand workers waited upon the Secretary to the War Department, with the result that in all probability the orders will again go to Sheffield for the hand made article. The men proved to the satisfaction of Lord Stanley that the hand made Fork was in every way superior to the cheap machine made one offered by the manufacturers. The qualities claimed for the hand made Fork were cleanness, sweetness, lightness and durability, these qualities being the outcome of 100 years' experiment. It was further represented that neither the nickel Fork nor the stamped Fork were in any way to be compared with the wrought steel Fork, when tested in the light of utility, nor even as to cheapness, when these advantages were taken into account. Lord Stanley listened to the men for nearly an hour. The men gave a vivid description of the 23 processes through which the material passed in the manufacture of a Fork. The only remark Lord Stanley made during the interview was that the men ought co-operatively to make these Forks, haft them themselves and supply direct to the War Department.

Opening Trade in Turkey.

It is stated upon excellent authority that the British ambassador in Constantinople is pressing the Porte for important concessions, which, if obtained, should go a long way toward opening up Turkey more thoroughly to commerce. It has been felt as a consequence of the recent seizure by the Turkish authorities of the foreign mails that a repetition of such an occurrence must not only be prevented, but that greater freedom must be accorded to circulation throughout the country of commercial literature, samples and similar matter. I experienced only a few weeks ago something of the irritation which bad postage arrangements in Constantinople must cause. A Constantinople firm wrote to this office asking for a copy of The Iron Age Index Supplement. The Index Supplement, together with a letter, was sent. Three weeks later, the Supplement came back, but the letter was delivered, the address being identically the same in both cases. I then sent another Supplement, and am very much in doubt if that has yet reached its destination. Obviously exporters who have sent catalogues to Turkey and obtained no response are inclined to be dubious about Turkish administration generally. If, therefore, better arrangements can be obtained by diplomatic pressure there is some possibility of trade being opened up with Turkey.

Australian Agents.

There is a complaint in an Australian contemporary that Australian agents for British and American houses too often lose their commission on orders which they have really secured, but which the purchasers have sent direct. A case is quoted in Sydney where a firm sent an order direct to the manufacturers, giving the agents a copy. When the order reached England the manufacturers' London agents stated that the makers had no Australian agent, and that the benefit of the order fell to them. After a considerable correspondence, the manufacturers acknowledged that the statement as to there being no Australian representative was incorrect, and admitted that their London agents were only entitled to commission on orders which they got from houses in the United Kingdom. The Sydney agents, however, have not yet received their commission. This is not the first complaint of the same sort that I have heard. It is clearly well worth while to get a reputation among agents in Australia and elsewhere for fidelity to the spirit as well as to the letter of the agreement.

Sheet Metal Wanted.

I am informed that makers of Brass Wares in South Staffordshire experience great difficulty in obtaining adequate supplies of certain kinds of Sheet Metal. The demand for the material for Cartridge Cases is so enormous and the price paid so much higher in proportion than ordinary trade consumers can afford that preference is naturally given to military requirements.

CHINA.

FROM OUR SPECIAL CORRESPONDENT.

Hong Kong, China, May 6, 1901.

To the Editor: I have spent over two months in China before venturing to write regarding the conditions existing here; they are too vast and complicated to grasp without time and study. I have discussed unhappy China with all classes, including some enlightened Chinese. In spite of present troubles there is much in China and the Chinese that makes one optimistic for her future, and I shall venture on a few impressions, from the standpoint of a merchant, that may not be without interest to your readers.

SOURCE OF THE AMERICANS' IMPRESSIONS

At home—that is, in New York, we obtain our knowledge of the Chinese from the immigrants to our country

and from the news in the press concerning our national relation with the official class.

MIDDLE CLASS CHINA'S MAINSTAY.

But the mainstay of China is neither of these two classes. The immigrant to our country, the well-known laundryman type of the East, is recruited from the coolie ranks. The official class is the aristocracy of China. The true mainstay of China is the middle class, which includes the merchants and store keepers. In dealing with this class one is forcibly impressed by their ability, sagacity and business integrity. They are without doubt the most enlightened part of the nation.

WHERE THE SCHOLARS COME FROM.

In answer to my inquiry of a member of the faculty of a large college for Chinese students which class furnished the best scholars, he said without hesitation, "The sons of the business men."

OFFICIAL CLASS CORRUPT.

The official class in China is rotten. This is generally admitted. The Viceroy or Totai pays for securing his official position and then gets rich on his exactions, which are levied with ingenuity.

CHINAMEN APT SCHOLARS.

The Chinaman is quick to learn and has appropriated, I am sorry to say, some lessons from the Europeans and Americans that are not to their credit as instructors.

HOW FOREIGNERS DEAL WITH CHINAMEN

In dealing with the Chinese it is very important, in fact indispensable, to be on the spot. Every European or American house I know does business with the Chinaman through a Chinese intermediary. The Chinese are very clannish and prefer in dealing with foreigners to do so through one of their own people. The Chinaman is slow to trust you, but once he finds you are worthy of confidence he becomes your "welly good fiend."

ENGLAND AHEAD IN CHINA TRADE; GERMANY GAINING.

England has, of course, the bulk of the Chinese business. Germany is pushing her hard and us, too. The German flag is seen far more frequently than is Uncle Sam's, and even the Englishman prefers to take his passage home on the well equipped "German Mail" to the time honored "P. & O." Our country is gradually working to the front and, after a careful study of the markets, I can see a future for a number of American lines that may be introduced.

HOW TO GET THE BUSINESS

The only way to increase our trade properly is to go to the ground and study it carefully, live with the people and observe their needs.

RUSSIA VS. UNITED STATES.

In Shanghai, which is the nearest large trading port to Tien-Tsin, our national relations, which included trade relations, were at an acute stage during my visit. The Great Russian Bear was menacing Manchuria, and had just advanced duties on our metal goods as a reprisal to our action in regard to sugar duties. Possibly that was a fair shot, but it made a good American "hot under the collar" to find that the Chinese merchant was actually prohibited by Russia from shipping into Manchuria any case with "U. S. A." stamped on it. This was vouched for to me by one of the largest merchants in Shanghai.

WHAT CHINA NEEDS.

As a nation China seems to lack solidarity. There are said to be between 300,000,000 and 400,000,000 people in China. In China proper there are 18 provinces. The people of one province are often unable to understand the dialect of the province adjoining. There is practically no railway communication. There are no wagon roads. Nothing but footpaths in the country back of European reservations. The great medium of communication is the complete system of waterways.

WESTERN PROGRESS AND CIVILIZATION NEEDED

With such conditions it is no wonder that China is slow to develop. But there are many signs of awakening in China. Her people are not aggressive or warlike. They are peaceful, simple, have great ability in mercantile pursuits and possess many qualities that command one's admiration. If China had an honest and enlightened home government her troubles ought to disappear quickly. Her common people have plenty of backbone and good sense, and if my judgment is correct, the time will come when the voice of these people will make itself heard in the land. HENRY T. SEYMOUR.

CLASSIFICATION UNDER THE GERMAN TARIFF.

From Frank H. Mason, Consul-General at Berlin:

As examples of the exceeding sharpness with which the German customs officials are now scrutinizing imports of manufactured merchandise the following rulings and reclassifications of recent date will serve to illustrate what may happen whenever any manufactured article is made of two or more component materials.

COVERT SNAP.—There is a certain Snap Hook known to the trade in America as the "Covert Snap," in Germany as "Carabiner Haken," which is made of malleable steel or iron, coated with tin. These have been imported for years under a duty of 10 marks ($2.38) per 100 kg. The Snap Hook has a latch in the form of a sliding bolt, which is thrown by a small spiral spring of brass or bronzed wire, wholly concealed within the shank of the hook. Recently, some zealous inspector has dissected one of these Snaps, removed the bolt, and discovered the hidden brass spring, which forms perhaps one-fortieth of the whole weight of the article, whereupon the Covert Snap has been reclassified as brass goods, dutiable at 24 marks ($5.71) per 100 kg. (220 pounds), which is said to be practically prohibitory in face of domestic competition.

ICE CREAM FREEZERS.—Another case of reclassification is that of American Ice Cream Freezers, which, being superior to anything of similar nature made in Europe, have of recent years found a large and increasing sale in Germany. They are made of wood, hooped, bound and otherwise equipped with iron, and have hitherto been classified for duty as "Iron Ware in combination with wood" (Eisenwaarenin Verbindung mit Holz) and dutiable at 10 marks ($2.38) per 100 kg.

Recently, however, the same Ice Cream Freezers have been reclassified as Wooden Ware in combination with iron, which makes wood the component material of chief value and raises the duty to 30 marks ($7.14) per 100 kg. These changes are noteworthy, not because the reclassified duties are abnormally high, but to show the importance to American exporters, before contracting to deliver large quantities of manufactured goods in Germany, of ascertaining by actual trial how they will be classified on passing the German Custom House.

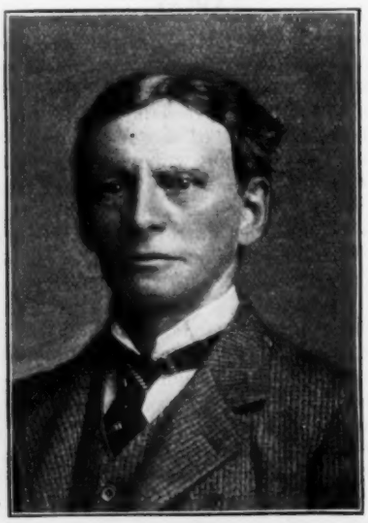
These sudden changes, and the similar ones which have been previously reported, have had the natural effect of rendering German merchants timid about giving large orders for foreign goods which are necessarily made of several component materials.

VIRGINIA-CAROLINA HARDWARE COMPANY.

THE VIRGINIA-CAROLINA HARDWARE COMPANY have recently been incorporated and are beginning business at Richmond, Va. Their charter provides for a capital stock of $100,000, a substantial portion of which has been already subscribed. The company will do a general wholesale business in Light and Heavy Hardware, Tinware, Sporting Goods, &c. The officers are as follows: John B. Pinder, president; W. S. Pinder, first vice-president; Lucius F. Cary, second vice-president; Henry G. Ellett, secretary and treasurer; John S. Ellett, Jr., assistant secretary and treasurer. The territory they will especially cover is the Virginias and the Carolinas. The president, John B. Pinder, and the first vice-president, W. S. Pinder, have been connected for a number of years with the Watkins-Cottrell Company of Richmond, and have thus had an excellent training for the enterprise into which they are now entering. Interested in the company, we are advised, are several of the prominent business men of Richmond, and the company are regarded as beginning business under very favorable auspices. The Messrs. Pinder are now in New York buying goods.

Pacific Coast Hardware and Metal Association.

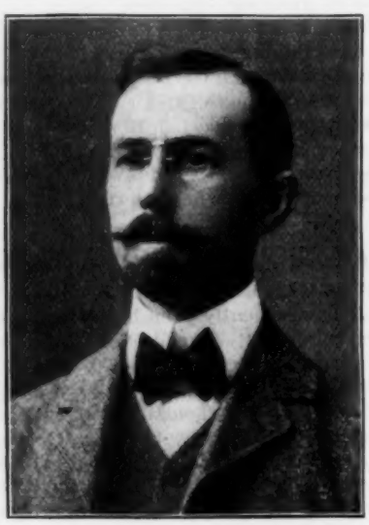
THE sixth annual convention of the Pacific Coast Hardware and Metal Association was held at Tallac, Lake Tahoe, Cal., on June 17, 18 and 19. The meeting was well attended, there being present representatives of all except three of the houses in the membership.



BRACE HAYDEN, President.

It was one of the most harmonious and enthusiastic of all the meetings held since the organization of the association.

Matters of general interest to the Pacific Coast trade were considered, and full and lengthy discussion of the present industrial conditions was indulged in by the members present. Owing to the death in February last of the president of the association, Charles F. Tay, Brace Hayden of the Dunham, Carrigan & Hayden Company, at the request of the members, had prepared a report, which he read at the meeting, detailing the work done by the association as coming under his observation as a member of the Advisory Board and Executive Committee, and also covering fully the existing market conditions and the general commercial situation.

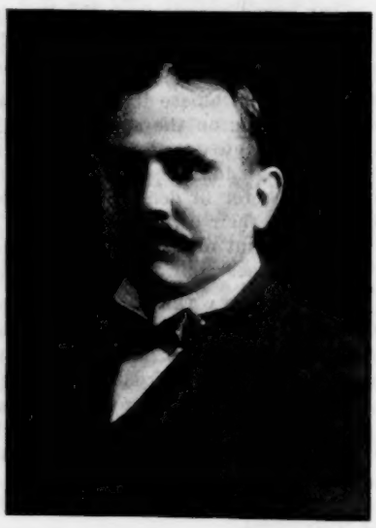


HAMILTON W. BARNARD, Secretary.

In the opinion of Mr. Hayden, taken as a whole, present prices are reasonable, the demand for goods active, and the consumption would not be greater if prices were lower. Mr. Hayden stated that instead of being a disturbing factor, the opinion was generally entertained that combinations of capital in the industrial world had given stability to the market, and had kept prices at a moderate and reasonable level. Mr. Hayden spoke very strongly with reference to the necessity of associations, being of the opinion that under present conditions they are of vital importance. The secretary, Thomas P. Smith, rendered a report going more into the details of the work of the association than did Mr. Hayden.

At the close of the business proceedings on Tuesday A. A. Watkins moved a vote of thanks to the retiring secretary, Mr. Smith, for the good work accomplished by him as secretary of the association. The motion was unanimously carried.

The business meetings were held on Monday, Monday evening, Tuesday and Tuesday evening, and on Wednesday the association enjoyed a grand picnic and trip on the lake, starting out in launches and rowboats for Rubicon Park, a very beautiful spot on Lake Tahoe, about 8 miles from Tallac. The occasion was a most enjoyable one, the members of the party fishing while *en route* to the park, and succeeding in catching all told fully a hundred trout, averaging in weight from 1 to 4 pounds. After partaking of a very elegant luncheon, which had been prepared by the proprietor of the Tallac House and served by waiters sent from the hotel, the party formed a circle under the trees, and A. A. Watkins of the firm of W. W. Montague & Co., San Francisco, in an appropriate speech, presented to Thomas P. Smith, who had tendered his resignation as secretary of the association, a very beautiful souvenir in the form of a solid silver loving cup, measuring about 18 inches in hight. Mr. Watkins complimented Mr. Smith very highly on the work which he had done as secretary of the association, and expressed the regret of all the members at his leaving.



THOMAS P. SMITH, Retiring Secretary.

Mr. Smith, who resigned his position for the purpose of entering business with the Turner Hardware Company, Muskogee, Ind. Ter., of which corporation he is vice-president, responded in very feeling terms, and expressed his sincere regret at severing his relations with the members of the Pacific Coast Hardware Association, which have been so pleasant for the past three years.

H. W. Barnard, who for the past three years has been engaged with the American Steel & Wire Company in San Francisco, is to succeed Mr. Smith as secretary of the association. Mr. Barnard's connection with Frank L. Brown, an earnest and ardent association man and one of the prime movers in the organization of the Pacific Coast Hardware and Metal Association, puts him in touch with the work he will have to perform, and it is believed that he will make a most efficient and worthy secretary.

The following named gentlemen were elected as officers for the ensuing year:

President, Brace Hayden, Dunham, Carrigan & Hayden Company, San Francisco.
First Vice-President, T. D. Honeyman, Honeyman Hardware Company, Portland, Ore.
Second Vice-President, L. C. Scheller, Union Hardware & Metal Company, Los Angeles, Cal.
Third Vice-President, E. B. Burwell, Seattle Hardware Company, Seattle, Wash.
Treasurer, Frank J. Baker, Geo. H. Tay Company, San Francisco.
EXECUTIVE COMMITTEE.—Wakefield Baker, Baker & Hamilton, San Francisco; A. A. Watkins, W. W. Montague & Co., San Francisco; A. L. Scott, Miller, Sloss & Scott, San Francisco; Wm. R. Wheeler, Holbrook, Merrill & Stetson, San Francisco; H. J. Morton, Geo. W. Gibbs Company, San Francisco; Geo. S. Scovel, Lloyd-Scovel Iron Company, San Francisco; E. W. A. Waterhouse, Waterhouse & Lester, San Francisco.

The members were very enthusiastic and unanimous in the selection of Mr. Hayden as president of the association, as they recognize in him an ideal man for this

LOVING CUP PRESENTED TO THOMAS P. SMITH.

position. Mr. Hayden served as president for nearly three years previous to the election of Mr. Tay at last year's meeting, when he declined further election. At the earnest solicitation of the members he has again consented to serve, and will, without question, give to the work the same earnest attention as during his past terms.

THE J. M. & L. A. OSBORN COMPANY.

J. M. & L. A. Osborn of Cleveland, Ohio, who succeeded the old firm of Myers, Osborn & Co. in 1888, have changed their style to the J. M. & L. A. Osborn Company. The firm were incorporated on July 1 under Ohio laws with a capital stock of $200,000. They carry a large line of all kinds of Tinners', Roofers', Builders' and Furnacemen's Supplies, together with a full line of Enameled Iron Ware, Copper Ware, Tinware, Wooden Ware, House Furnishings and Kitchen Specialties. The change is made as the firm are about to move to their new quarters, located in the Viaduct, in the building formerly occupied by the Co-operative Stove Company. The shipping facilities in the new location are unexcelled. The building has a frontage of 120 feet on the Viaduct and below of something over 100 feet on the C. C. C. & St. L. R. R. A private switch permits the concern to unload directly into their warehouse, thus enabling them to handle their goods at a minimum of cost. The D. & C. and C. & B. boat docks are just across Merwin street from their building, and all the railroad depots of the city are in close proximity on the Viaduct level. An immense salesroom will enable the new company to show to advantage their line of goods. Two large electric elevators will insure quick delivery of all goods to their proper places, and the city trade will have their orders promptly and carefully attended to through a large delivery room on the Viaduct level. The officers of the new company are James M. Osborn, president, and L. A. Osborn, secretary and treasurer. The company will have their branch warehouse at 39 Vine street, Columbus, Ohio, as before.

DEATH OF ANTHONY F. SEEBERGER.

ANTHONY F. Seeberger, for many years a prominent Chicago Hardware merchant, died July 10 in Des Moines. His brother, John D. Seeberger, a Hardware merchant of Des Moines, died in April last, leaving a large estate which required his attention. The death of the second brother was wholly unexpected, as he had been enjoying excellent health.

Mr. Seeberger was born in Wetzlar, Rhenish Prussia, in 1829, and when but seven years old was brought to New York by his parents. In 1838 he was taken to Holmes County, Ohio, where his father became a farmer. When 13 years old he went to Wooster, Ohio, to enter the dry goods store of J. B. & N. Powers as a clerk, and when he attained his majority he was made a partner in the firm.

The business instinct, strong in the young man, impelled him to sell his store interests in 1852 and map out a plan for the invasion of the great new West. Iowa had no Hardware stores, he learned. He appeared at Oskaloosa and "billed the town," announcing the early opening of a store with exclusive lines of goods. Everything had to be hauled by wagon from the Mississippi River. Farmers told him he was visionary, but he established the store and within a year had three competitors. Business was good and the young man prospered.

In 1864 he saw in Chicago a better field for his energies, and, selling his Iowa interests, he established the wholesale Hardware house of Seeberger & Breakey at 143 Lake street. Subsequently this firm increased their business so that they had to move to State and Lake streets, where they were burned out in the fire of 1871. The firm rebuilt and existed as Seeberger & Breakey until 1885, when Mr. Breakey retired. From 1885 until 1890 it was A. F. Seeberger & Co. During these four years Mr. Seeberger was Collector of Customs for the port of Chicago. In 1890 he sold out his business and was made treasurer of the Columbian Exposition Company. He had much to do with the financing of the World's Fair, giving to it all his time and his great executive ability. In 1893, when the success of the enterprise was assured, he resigned. He is survived by a widow and three children. The eldest, Charles D., is connected with the Otis Elevator Company.

RUSSELL, BURDSALL & WARD BOLT & NUT COMPANY.

RUSSELL, BURDSALL & WARD BOLT & NUT Company, Portchester, N. Y., absorbed the Russell, Burdsall & Ward Company and the Portchester Bolt & Nut Company on the 1st inst. The new corporation have a capitalization of $1,500,000 common stock and $500,000 preferred, all of the common and $300,000 of the preferred being paid in. The company will erect new buildings at once, in order that the combined plants may be placed under one roof, and there will be extensive additions made to the facilities, so that the company will be prepared to offer to the trade a much larger line than either of the old companies have formerly been able to do. With the most improved facilities in each department; with a reorganization based upon the experience of 55 years; with ample capital and a strong Board of Directors the company will be in a position to successfully take care of their trade and extend their business. The officers of the corporation are: William L. Ward, president; Samuel Comly, vice-president; Richard H. Burdsall, treasurer; Walter S. Comly, general sales agent; Ellwood Burdsall, secretary. The Board of Directors comprises William Nelson Cromwell, Samuel Comly, Richard H. Burdsall, Walter S. Comly, Charles Eldredge, Howard E. Marshall, Ellwood Burdsall, Robert W. Parsons, William L. Ward.

MONONGAHELA VALLEY RETAIL HARDWARE DEALERS' ASSOCIATION.

THIS association issues its constitution and by-laws in convenient pamphlet form for circulation among retail merchants and also jobbers and manufacturers with whom they have to do. It refers conspicuously to the way in which the trade of the retail Hardware dealer is encroached upon by the catalogue house and department store, and calls upon the trade to unite their efforts against these evils, making the point that organization is the keynote of success in modern commercialism. The following preamble and resolutions are given place in the pamphlet:

PREAMBLE.

The Monongahela Valley Retail Hardware Dealers' Association is intended to include in its membership all legitimate Hardware dealers throughout the Monongahela Valley and vicinity.

The trade recognize the desirability of an organization and the need of closer social and business relations, realizing that much unjust competition arises from misunderstandings and imaginations therefrom.

We also feel the need of some protection from the indiscriminate sale of goods by manufacturers and wholesale houses to those who are not in the regular trade and are not entitled to recognition as Hardware dealers from manufacturers and jobbers.

RESOLUTIONS.

Whereas, Some manufacturers and jobbers in general Hardware, Stoves, Tinware, Paints, Leads, Oils, Varnishes and kindred lines pertaining to the Hardware business persist in selling their goods through illegitimate channels, placing us toward our customers in the light of extortioners and causing a general demoralization in the retail Hardware trade,

Resolved, That the members of this association confine their purchases of Hardware, Stoves, Tinware, Paints, Leads, Oils, Varnishes and kindred lines as far as practicable to manufacturers and jobbers who sell goods to firms only that are legitimately engaged in the retail Hardware business as defined in these resolutions.

Resolved, That any manufacturer or jobber in Hardware, Stoves, Tinware, Paints, Leads, Oils, Varnishes and kindred lines, furnishing net prices or discount sheets contrary to the foregoing resolutions either by themselves, employees or agents, shall be considered as disapproving of these resolutions.

Resolved, That it is injurious to the retail Hardware dealers of this association for manufacturers and jobbers to make estimates or quote net prices direct to the consumer for Hardware, Tinware, Paints, Leads, Oils, Varnishes entering into the construction of buildings or for private use, and that all such estimates or net prices shall be made through a legitimate Hardware dealer.

Resolved, That every member of this association constitutes a committee of one, and is expected to report to the proper officers any violations of these resolutions.

Resolved, That these measures are just and necessary for our welfare, and it is expected that the rigid enforcement of the resolutions will be carried out.

Letter to Jobbers and Manufacturers.

With a view to inducing manufacturers and wholesale Hardware houses to sell only to legitimate Hardware dealers, the following letter has been prepared and is being sent out by members of the association:

An organization of the retail Hardware dealers of the Monongahela Valley has been formed under the name of the Monongahela Valley Retail Hardware Dealers' Association.

We inclose you a copy of the constitution and by-laws of this association, and respectfully ask that you carefully examine same. We believe that this examination will result in your giving the cause your hearty sympathy, and that you will co-operate with us in working together for our mutual good.

The aim of the association, which we believe is a legitimate one, is explained in the preamble to the constitution. The condition of the retail Hardware business at the present time is, to say the least, alarming, and the future outlook is anything but bright. What we ask, and we feel that we are not asking too much, is that manufacturers and wholesale Hardware houses sell to none but legitimate retail Hardware dealers.

Further, the members of the association have resolved to confine their purchases as far as practicable to manufacturers and jobbers who co-operate with us in this matter, and who sell to none but legitimate retail Hardware dealers.

We feel confident that a thorough investigation of existing conditions will prove that our position is justifiable, and that the Hardware manufacturers and jobbers will gladly give us their support. Our cause is spreading throughout the State, and in order to concentrate our efforts along this line, we hope in a short time to have the retail Hardware dealers of the State united in one association for the betterment of the trade, realizing that in union there is strength.

SHORT METHODS IN FIGURES.

BY C. G. AMBLER

SO many articles of Hardware are sold at list and discount that it is desirable to use short methods as much as possible in reckoning the net cost and selling price.

Discounts.

Every Hardwareman knows that the net figures are found quicker by multiplying the list by the net cost per cent. than by subtracting the amount discounted from the list. For example, if we have 60 and 10 per cent., instead of finding 60 per cent. of the list and subtracting that from the list, then deducting 10 per cent. of the remainder, we would say that a discount of 60 per cent. leaves 40 per cent. of the list, and 10 per cent. more discount reduces it to 36 per cent., which is the net cost per cent.

Thus, if we have Files listed at $13.50 per dozen, the net price at the above discount will be 36 per cent. of $13.50, or $4.86. Another kind, at $14.75 list, would net $5.31. This method is especially helpful in case it is necessary to reckon the prices of a number of articles at the same discount, but listed differently, as when making price-lists or marking goods from the invoice. It is of still greater convenience as a preliminary step in getting the net price of a single article.

Determining the Net of a Single Article.

The net price of a single article listed by the dozen may be found by multiplying the list by one-twelfth of the cost per cent. for a dozen. Of course the rule may be used as well for any fraction of a dozen. If it is required to know the net price of one File at $13.50 per dozen, less 60 and 10, having found that the net cost per dozen is 36 per cent. of the list, it follows that one will be one-twelfth as much, or 3 per cent. of the list, which is 41 cents, taking the nearest whole number, as customary where fractions occur. At 40 and 15 per cent. the result is for a dozen 51 per cent. of the list, or $6.89; a single article 4¼ per cent., or 58 cents.

Sometimes the net per cent. single cost will be readily converted into a more convenient common fraction. Thus, at 10 per cent. discount, the net cost per cent. being 7½, and as the ratio to the number of dimes of the list price is ten times as great, the equivalent will be 75 per cent., or, expressed in a common fraction, three-fourths of the number of dimes per dozen list. This is the same in effect as taking three-fourths of the list and cutting off the right hand figure, but involves less figures. At $13.50 list the result would therefore be three-fourths of 135, which is $1.01. Using the same list in each of the following examples, we find in like manner that with 20 per cent. discount, the net per cent. single cost being 6 2-3, the result in cents is 66 2-3 per cent., or two-thirds of 135, which is 90 cents.

Some Examples.

At 25 % discount it is 6¼ % of list, or ⅝ of 135, which is 85.
At 40 % discount it is 5 % of list, or ½ of 135, which is 68.
At 50 and 10 % discount it is 3¾ % of list, or ⅜ of 135, which is 51.
At 60 % discount it is 3 1-3 % of list, or 1-3 of 135, which is 45.
At 70 % discount it is 2½ % of list, or ¼ of 135, which is 34.
At 85 % discount it is 1¼ % of list, or ⅛ of 135, which is 17.

It will be seen that the same common fractions are obtained more quickly by dividing the single cost per cent. by ten. I have introduced the percentage of dimes as an explanation of the principle.

Combination Discounts.

There are a number of combination discounts which are equivalent to the above and, therefore, will work out the same results. For example, 40 per cent. equals 25 and 20, or 20 and 16 2-3 and 10, or 33 1-3 and 10. They will be recognized as they are used, and a complete list of them will be found in "Ladd's Discount Book." By the use of the above method one can, after a little practice, give the net single price almost instantly upon knowing the list and discount, and usually without the aid of a pencil

Where Repetitions Occur.

Again, when there occurs in the discount a repetition, as, for example, of several tens, it is not necessary to make a complete calculation for each, but by either finding the net cost per cent., or, as in some cases it may be more convenient, having found the first amount to be deducted, each succeeding amount will decrease regularly by the rate per cent. last used. Subtract the sum of the amounts thus found, counting as a cent each fraction exceeding ½ cent. Given $4.58, less three 10's and 5 per cent., we have, first subtraction, 46 cents; second, 10 per cent less, or 41 cents; third, 37 cents; fourth (one-half of 37, less 10 per cent.), 17; total, $1.41, which, being deducted from $4.58, leaves $3.17. Another example: $18.63, less 25 and three 10's, gives, first, $4.66; second ($1.86, less 25 per cent.), $1.40; third, $1.26; fourth, $1.14; total, $8.46; remainder, $10.17.

Surface Measure.

Customers, especially the ladies, when given a price per square foot, frequently ask the price per yard of Wire Cloth. The answer, which may be given readily, will be, for every cent per square foot one-fourth as many cents as there are inches in width, because each inch of width gives one-fourth of a square foot to the yard of length. Thus, 30-inch Wire Cloth at 3 cents per square foot would be three-fourths of 30, or 22½ cents, per linear or running yard. Of course, in reckoning the value of your sale, some fractions of the yard are not convenient. In such cases find the surface measure, but not as some clerks do, by the long and tedious process of finding the number of square inches and reducing that to feet. The use of duodecimals is much shorter. Clerks who have not learned that method will be well repaid if they will spend the little time required in learning it.

TRADE WINNING METHODS.

ADVERTISING HODGE-PODGE.

BY A. NEXPERT.

Wise merchants reach different classes of trade—townspeople, contractors, farmers, &c.—by different methods. Depending upon one method or medium to attract all kinds of trade is something like depending upon the old fashioned plan of giving the same medicine to all the children in a family for every complaint. It is an unsatisfactory way.

* * *

Town Folks.—In towns of different sizes the people who are able to buy different grades of goods vary largely in proportion to the size of the place. In large towns and cities all kinds of customers are represented. In these we find the rich, the moderately well to do and the laboring class. The poor are not trade producers, so they will not be taken into consideration.

* * *

Laborers.—Among the laboring class there are many who seldom, if ever, read a newspaper. Such people can be reached through show window display of the goods they are able to buy. If the prices, in plain figures, are attached to the articles the results will be more satisfactory than if price is not shown. An article bought by one of this class is generally inspected by the neighborhood, so that a pleased customer is one of the best advertisements, while a dissatisfied one is the worst. Care should be taken to accord these people fair treatment, and to supply them with as good merchandise as can be done at a fair profit.

Well to Do.—The people who are moderately well to do form the largest if not the best paying trade a merchant has. They buy a large proportion of the staples sold and some of the luxuries. In selecting a medium through which to reach them the newspaper of largest circulation is the one to choose. The goods to be advertised should be those they are likely to buy. Occasionally they might purchase a Chafing Dish, a Coal Vase or a Tile Lined Refrigerator, but these are not the kinds of goods they will be regularly interested in, as they will be in house furnishing goods, kitchen utensils and other needful articles.

* * *

The Rich.—It may be possible to reach the richer class of people through the same paper, or it may be necessary to advertise in some other. It would be a waste of time and good money to advertise cheap Tinware or seconds in Enameled Ware to this class of trade. Whatever is the fad or fashion in Hardware luxuries will interest them most. Such goods should be made to pay big profits. Their trade for necessities will probably come to the same store where they buy their luxuries. Some merchants find it profitable to send typewritten postal cards, calling attention to some such an article as a Door Check and Spring, inviting those interested to call and see the article in actual use.

* * *

Contractors.—Letters or personal interviews have been found to be effective means of getting contractors' business. They are not, as a rule, numerous enough to advertise especially for, and many of the goods a merchant is called upon to furnish are not carried in stock.

* * *

Farmers.—The practice of issuing a yearly illustrated catalogue and mailing it to all farmers who might be induced to trade in the town is becoming more general each year. Those who have done it one year have found it paid well enough to do it again, improving the catalogue in size and interest. Some firms have adopted the plan of writing letters to farmers, calling attention to the goods carried which they may be particularly interested in, and inviting them to make their stores headquarters while in town. The letter heads are changed for each batch of letters, which are sent out two or three times a year, or perhaps oftener. The farmers have expressed pleasure at receiving the letters, which are read by the entire family, and it has been the means of creating cordial relations.

* * *

Continually Scheming.—A merchant should be scheming all the time, and prepare a month or two in advance for the presentation of seasonable goods. If there is going to be a street fair, a business parade, circus, a big ball game, bicycle race, a political meeting, &c., elaborate preparation can be made to attract attention to the business. Steady, progressive scheming to increase business when nothing particular is going on, and to keep business good during the "dull seasons," is the thing that wins.

* * *

Perfecting Lines.—One line of goods after another can be taken up and perfected to as great an extent as circumstances permit, and a feature made of them in advertising. When a line cannot be made to pay it should be cleaned out and some other line taken up that does pay. Goods do not pay when they do not give a fair return for the amount invested, either because of limited sales or small profits.

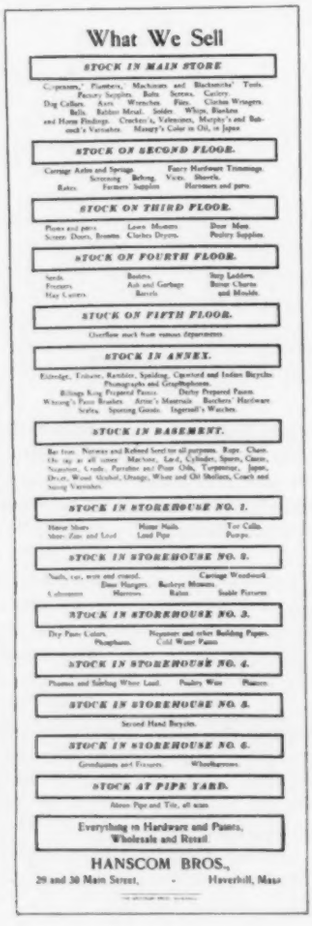
* * *

Finding Out.—It may be that a certain line is not complete enough, or that it is not pushed enough. Whether it pays or not can be ascertained by keeping a memorandum of sales of any line and figuring profits for 30 or 60 days.

The Hardware and Stove store conducted by W. H. Plank at 621 Kansas avenue, Kansas City, Kan., was destroyed by fire a short time since.

A NOVEL CIRCULAR.

A novel circular has been issued by Hanscom Bros., Haverhill, Mass., that cannot but attract attention. As shown in the accompanying reduced size illustration, the circular consists of a list of goods carried in each of the floors and store houses of their large establishment. The circular as printed measures 5 x 15 inches. The idea is a good one and might be modified to suit the


What We Sell

STOCK IN MAIN STORE

STOCK ON SECOND FLOOR.

STOCK ON THIRD FLOOR.

STOCK ON FOURTH FLOOR.

STOCK ON FIFTH FLOOR.

STOCK IN ANNEX.

STOCK IN BASEMENT.

STOCK IN STOREHOUSE NO. 1.

STOCK IN STOREHOUSE NO. 2.

STOCK IN STOREHOUSE NO. 3.

STOCK IN STOREHOUSE NO. 4.

STOCK IN STOREHOUSE NO. 5.

STOCK IN STOREHOUSE NO. 6.

STOCK AT PIPE YARD.

Everything in Hardware and Paints, Wholesale and Retail.

HANSCOM BROS.,
29 and 30 Main Street, - Haverhill, Mass

A Novel Circular (Actual Size, 5 x 15 Inches).

requirements of many Hardware merchants, serving as a means to let the public know how extensive a stock is carried.

REQUEST FOR CATALOGUES, &c.

The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

Heymann Sucesores, Mazatlan, Sinaloa, Mexico, are intending soon to erect a new building for their Hardware business, and in connection therewith request from manufacturers catalogues relating to Store Ladders, Joist Hangers, Elevators, Metal Ceilings, Office and Store Furniture, Skylights, T Rails, Iron Railings, Iron Wire Office Guards, Windows, Doors, Blinds, &c. The firm would also be pleased to have information as to prices on the above so as to save time in ordering.

W. W. Dickinson Hardware Company, Little Rock, Ark., have amended their charter so that their capital stock has been increased to $150,000. This is partly owing to the growing business of the company, but chiefly from the fact that C. C. Rose, formerly in the jobbing Mill Supply business in Camden, Ark., has become associated with the company, taking quite a large block of stock and being elected vice-president. The company expect to put more travelers on the road and to increase the satisfactory business already done.

PRICE-LISTS, CIRCULARS, &c.

GOODELL COMPANY, Antrim, N. H.: Under the title "Success Attained and Maintained" the company have issued an interesting pamphlet giving an historical sketch of the business, embellished with exterior views of the different buildings comprising their plant and a number of interior views. Special attention is directed to their line of Table Cutlery and to the improvements made by the company in this department of their business.

THE GOODWIN & KINTZ COMPANY, Winsted, Conn.: Bulletin No. 18, illustrating with list prices Mirror Plateaux finished in silver or gold. The company refer to the assortment as consisting of good staple patterns and proved sellers.

J. E. BOLLES IRON & WIRE WORKS, Detroit, Mich.: Catalogue No. 20, 64 pages, showing the line of Iron, Wire, Brass and Bronze work of which they are designers and manufacturers. The company make a specialty of Bank Railing and Elevator Inclosures and Cars.

DENT HARDWARE COMPANY, Fullerton, Pa.: Catalogue of 63 pages, showing their extensive line of Refrigerator Trimmings and similar goods for butchers' cooling rooms, grocers' ice boxes, beer coolers and cold storage. A separate circular is devoted to their standard Refrigerator Fastener, patented March 6, 1901, and recently put on the market.

CLEVELAND TWIST DRILL COMPANY, Cleveland, Ohio, and 62 Reade street, New York: Handy price-list card hanger, 9⅝ x 6¼ inches, to hang near Drill stock, showing sizes and prices of Twist Drills, Sockets, Reamers, Bits, Oil Tube Drills, &c.

E. JENCKES MFG. COMPANY, Pawtucket, R. I., John H. Graham & Co., selling agents, 113 Chambers street, New York.: Illustrated price-list of Bright and Brass Wire Goods, Spring Cotters and Keys, Belt Hooks, &c., giving list prices adopted April 1, 1901.

RUSSELL & ERWIN MFG. COMPANY, New Britain, Conn., and 43-47 Chambers street, New York: Illustrated booklet of their new Mecca design, showing a full line of door and window furnishings of a Moorish character in wrought metal, real bronze and steel bronze plated. The door sets are arranged with their Rapid Mortise Easy Spring Locks and also Locks of the regular styles.

THE LAWSON MFG. COMPANY, 115 Lake street, Chicago: Large illustrated card for wall advertising, showing a cut of the Matchless Double Acting Floor Spring Hinge and the Hinge as attached to a door.

THE STANLEY WORKS, New Britain, Conn., and 79 Chambers street, New York: An artistic booklet relating to their Ball Bearing Hinges. The cover is printed in colors and the pamphlet is attractively illustrated. Some important buildings in which these Butts are used are shown, among which are the Park Row Building, New York, and the Milwaukee Public Library and Museum.

NORTH BROS. MFG. COMPANY, Philadelphia, Pa.: Circular illustrating and describing the Rapid Ice Breaker for breaking ice in small pieces for use in freezing ice cream for confectioners, bakers, hotels and restaurants, and for packing fish, oysters, milk, &c., or where broken ice is required in quantities. The Breaker is arranged for hand and power, and is referred to as an efficient, durable and substantially built machine.

MORLEY BROTHERS, Saginaw, Mich.: A number of new leaves for insertion in their catalogue illustrating a variety of goods which have been added to their stock.

AFTER 15 years' experience in the railroad, mining and contractors' supply business in the office of James Cooper, Montreal, Canada, W. H. C. Mussen has decided to branch out for himself in the same line, and has opened an office and warehouse at 763 Craig street, in that city. The firm style is W. H. C. Mussen & Co.

THE CHICAGO SPRING BUTT COMPANY.

THE Chicago Spring Butt Company, whose factory was destroyed by fire March 15, and who have since been occupying temporary quarters in another building, are again comfortably housed under their own roof. They have completely rebuilt the burned factory and have greatly enlarged and improved their manufacturing facilities. They had expected that this could be done in a few weeks after the fire, but the general activity in the building trade prevented the rapid delivery of the necessary materials. Nearly four months have thus elapsed, but the company have probably been benefited by the slow progress in building as they have been able to give more thought to the equipment and the arrangement of the different departments.

The factory of the company is located at 48 to 54 Union Park place. The building, which is a fine substantial brick structure, covers a ground space of 51 x 125 feet and comprises five stories and a basement. The entire building is devoted to the company's purposes. The building is of the best type of heavy mill construction and has been carefully remodeled, with the departments so arranged as to facilitate the handling of manufacturing materials and their passage through the several processes until they become finished products.

The raw materials are received in the basement, which is equipped as a press room. Numerous presses are used, among them being some of the largest in Chicago. The company had been gradually substituting steel for cast iron in the manufacture of their Hinges at the time of their fire. In rebuilding their factory they have completed arrangements for manufacturing all parts of steel. Very large presses are therefore required for shaping the larger sizes. The change to steel construction has been very expensive, requiring a large investment for necessary machinery, but the quality of the goods turned out is far better and they are therefore much more satisfactory to the trade. From the basement the parts are taken to the different floors and go through processes of fitting and assembling until they reach the top story, which contains the polishing and plating rooms for imparting the final finish. On the top floor also is a fine equipment of special machinery for the manufacture of the springs used in Spring Hinges. The company make all their springs. The offices are located on the first floor of the building and the machine shop on the second floor.

The company use such large quantities of sheet steel in manufacturing their specialties that they purchase it in lots of 200 to 300 tons, and at the same time are heavy consumers of steel rods used in manufacturing the springs. Their facilities last year enabled them to turn out and sell over a quarter of a million pairs of Spring Hinges, and they expect, with their improved facilities, to increase their capacity at least 50 per cent.

The products of the company comprise Spring Door Hinges in great variety, including such special goods as Fire Engine House Hinges, Saloon Door Hinges and Lavatory Hinges, also Door Springs, Push and Kick Plates, House Numbers, Barn Door Hangers, &c. They do a large foreign business, which has increased over 100 per cent. in the past two years. Their traveling representative, C. S. Shanklin, makes a yearly trip to the leading cities of Europe, keeping in touch with foreign buyers. The business is under the general management of Joseph Keene, by whom it was founded in 1884.

E. F. REECE COMPANY'S CATALOGUE.

THE E. F. REECE COMPANY, Greenfield, Mass., have just issued a catalogue of 64 pages, illustrating and describing their extensive line of Screw Cutting Tools for machinists, blacksmiths, bicycle, automobile and electrical work. This company, whose business was established in 1874 and incorporated in 1898, manufacture Reece's Patent Improved Hand Bolt Cutters or Screw Plates, Interchangeable Tap and Die Holders for bit brace, &c., for a great variety of uses.

NATIONAL SEWING MACHINE COMPANY.

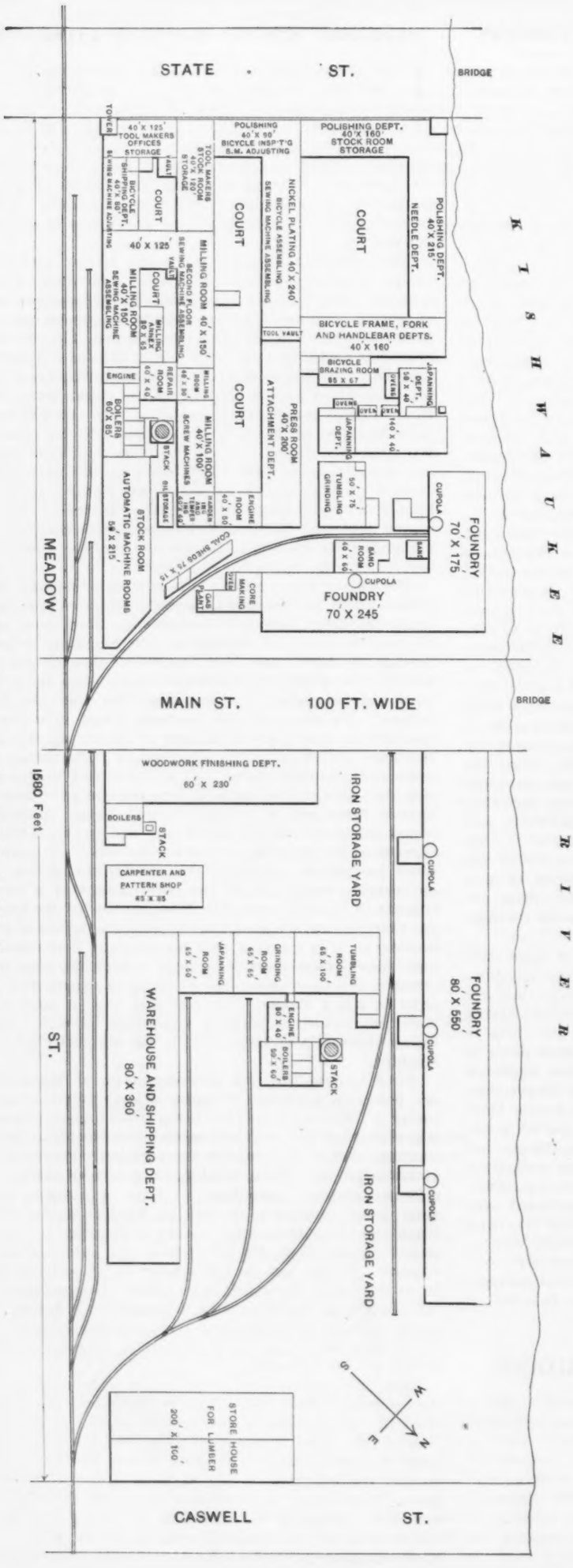
THE present extensive works of the National Sewing Machine Company were located at Belvidere, Ill., about eleven years ago. This enterprise is the outgrowth of a business started in Chicago on a moderate scale, but which has flourished vigorously ever since it was transplanted. While its history during these eleven years has been one of continuous expansion, the development in the last four years has been particularly rapid. Within that time the capacity of the works has more than doubled.

This company are said to be the largest manufacturers of exclusively family Sewing Machines in the country. They also make Bicycles, but the manufacture of Sewing Machines constitutes much the greater part of their business. The factory has made over 1100 Sewing Machines a day for a stretch of seven months during the past year. This was done by running during the evening. Additions have been made to the works since that time so as to enable the company to turn out 100 complete Machines per hour, with a capacity also for making 200 Bicycles a day. The improvements they have made and are making are particularly designed to enable them to keep up with the expansion of the Sewing Machine branch of their business. Their Bicycle trade is by no means neglected, the company expecting to continue to maintain their position in the Bicycle trade as extensive makers of strictly first-class Wheels.

The aim of this company is to popularize Sewing Machines which can be sold at a moderate price and thus reach the great mass of consumers. They long ago adopted the policy of marketing their Machines largely through the Hardware trade, instead of through special agencies, the jobbers of Hardware constituting the principal channel through which their Machines are distributed. In this way the company avoid in a great measure the heavy extra expense of marketing Sewing Machines which must be incurred in endeavoring to reach the consumer direct. At an early day they realized that to suit the trade it was necessary to manufacture Machines of simple design, whose operation would easily be understood by any one having a little experience in operating a Sewing Machine. A complicated mechanism requiring the careful instruction of an operator would not fill the requirements of a trade handled in this manner. The National line of Machines are therefore so designed that special instruction is not necessary. It is a saying with the company that a salesman has no more need of being a Sewing Machine operator to sell their goods than of being an expert cook in order to sell a Range. The company have a large export trade which is showing continuous growth. The export trade is also facilitated by the simplicity of the Machine.

They manufacture ten different styles of Machines, one being an automatic Machine and therefore constituting a distinctive type, five being of the highest grades, which embody the very best mechanical ideas and most thorough finish, and others of standard styles sold at lower prices. These Machines are turned out in 78 different patterns, according to styles of cabinets and other details familiar to the Sewing Machine trade. The Machines differ from one another sufficiently to form totally distinct lines, but all of them are carefully constructed and are put on the market as thoroughly reliable Machines. Every Machine, after it passes through the assembling and decorating departments, is tested by actual work for a sufficient period to demonstrate it to be in complete order. The system of inspection and testing is very thorough.

This information is introductory to a description of the company's plant and will serve to indicate the character of the business which they conduct. A ground plan of the works is herewith given, which shows how great is their extent. The plant covers 20½ acres of ground, the buildings having in them 16 acres of floor space. The factory is connected by private side tracks with the Chicago & Northwestern Railway. The side tracks used by the company comprise in all 6055 feet. Their shipping platforms afford room for the simul-



Arrangement of Plant of National Sewing Machine Company.

taneous loading of 28 cars. Although the buildings have been erected at different times, and the great growth of the plant could not be foreseen when manufacturing operations were begun, such an orderly arrangement has been preserved that the manufacturing processes avoid any loss of time in rehandling material. In the erection of new buildings and the maintenance and enlargement of the mechanical equipment the most approved modern practice has been studied.

The vigorous growth of the works is well indicated by a brief description of the improvements made the past year. These embrace a three-story building 41 x 160 feet, which is now used for the manufacture of Bicycle frames and Sewing Machine Needles; a one-story brazing department, 35 x 67 feet; a one-story wing to the assembling building, 30 x 30 feet; a two-story tumbling department, 50 x 75 feet; an addition to the old foundry, 65 x 175 feet, and a four-story warehouse and shipping department, 80 x 360 feet. During the same year two new draft stacks were built, one 165 feet high with a 7-foot flue, and one 110 feet high with 5-foot flue. This year the improvements comprise a two-story carpenter and pattern shop, 45 x 85 feet; one-story new foundry, 80 x 550 feet, with sand rooms, coke rooms, &c., attached; one-story building 80 x 190 feet, to be used as tumbling room, grinding room and japanning room, all separated by fire walls; engine room, 20 x 40 feet, containing one 200 horse-power engine, and boiler room, 30 x 40 feet, containing one 300 horse-power boiler; also a third floor added to the automatic department, 50 x 215 feet. This year also an additional boiler house has been built, 20 x 50 feet, containing one 750 horse-power boiler. The company use much more steam than is needed merely for power, much being used for japanning rooms and heating purposes, the entire plant being heated by steam. They consequently have seven Heine safety steam boilers, having a much larger capacity than is necessary to operate their six engines. Steam plants are located at different parts of the factory for convenience. The engines are also located at different points instead of being in one central power house, and have an aggregate of 2300 horse-power. The company have a large electric plant which is operated by two Westinghouse engines belted to dynamos, which furnish the current for 7000 incandescent electric lights and 135 arc lights. Electric current is transmitted to some portions of the factory for power, the elevators for instance, 16 in number, being operated by electric motors, while some isolated departments of the factory also have machinery operated by motors.

The gas used on these premises is manufactured by the company, the gas plant having a capacity of 180,000 cubic feet per day. Gas is used in running the brazing department and extensively in the hardening and tempering departments.

The total number of employees now on the rolls of this company is 2300.

who represent 27 different trades. The works of the company comprise iron foundries, tumbling rooms, pattern shops, carpenter shop, press room, brazing room, japanning rooms, milling shops, machine shops for general work, automatic machine shops, tool room, hardening and tempering room, assembling room, decorating room, wood work finishing rooms, inspecting rooms, and storage and shipping departments.

It would require volumes to thoroughly describe the different processes conducted in these various departments. A Sewing Machine contains on an average no less than 468 separate pieces, including attachments. Many of these pieces pass through the hands of several workmen in being turned, milled, hardened, ground, polished, plated or japanned, &c. A screw, for instance, first reaches the factory from the rolling mill in the form of a steel rod. This goes to an automatic screw machine, where the rod is transformed into a quantity of screws. Next each screw goes to a workman, who mills a slot in the head for a screw driver. It is then cleaned of oil and dirt and passes to an inspector, who carefully gauges it to see that it is of the correct size and form in every way. It next passes to the tempering department, where it is thoroughly case hardened. The polisher then takes it and smoothly polishes the head and exposed parts. It next goes with thousands of its fellows and each one must be separately secured to a string or bunch by wiring them together with copper wire. They are then immersed in the copper plating bath, on their removal from which they are washed, taken from the copper wire, sent to a polisher to buff the copper, are returned to the plating department and are again wired together as before and submerged in the nickel plating bath. On removal from this bath they are again washed, taken from the wires and once more given to the polisher for final attention and polishing. The screw is then ready for inspection, after which it goes to the stock room. A Sewing Machine contains 87 different screws. Few of these are of the same pattern, so that merely the manufacturing of screws is a process requiring quite a variety of machines.

The press room is an interesting part of this factory. It contains a large number of heavy presses used for the purpose of punching blanks from steel sheets, which are afterward formed into shapes for attachments. The company make all their own attachments, and claim to be the only Sewing Machine manufacturers who do this. They make every attachment of steel, not a piece being formed of soft metal and not one having a soldered joint. All attachments requiring several parts are riveted together, instead of being soldered. The company are thus enabled to furnish attachments which will exactly fit every machine, and consequently best results are secured by those who operate the machines.

The thoroughness with which all work is done by the company is manifested in the Bicycle department as well as in the manufacture of Sewing Machines. They make their own pedals, chains, spokes and nipples. In this way they are able to secure absolutely reliable parts.

Exceedingly fine work is done in the iron foundry. Here much use is made of molding machines, which are of the company's own design and built in their own shops. The work done here, being constantly duplicated, is of a character to secure great expertness on the part of molders. The castings turned out are remarkably smooth. For instance, the bed plates, arms, legs, fly wheels, &c., are so smoothly surfaced as they come from the foundry that they require no grinding, filing or polishing as a preparation for japanning, yet the appearance of the finished machine with its highly polished surfaces would seem to indicate that this had been done.

The nickeling department in these works is unusually extensive and capable of turning out a great quantity of work. The nickeling is very thoroughly done. Most nickeled parts are first heavily plated with copper. They are then buffed, after which they are placed in the nickel bath. This secures a body which is capable of receiving the finest possible polish.

The machine shops comprise not only the ordinary shops in which the usual hand work is done, but also departments containing a large number of milling machines for special work, gear cutting machines, and two very interesting rooms of large size filled with automatic machines. In the shops in which hand work is done jigs are largely used. These jigs are quite frequently of complicated design specially gotten up for the work turned out by this company. By the use of jigs thoroughly accurate work is secured. The milling shops contain milling machines of a variety of patterns capable of performing all operations which a milling machine is adapted to turn out economically. The company use many multiple drills, which greatly expedite the work of drilling parts requiring a number of holes. The shop devoted to automatic machines contains a great number of exceedingly ingenious tools, many of which have been specially built to suit the requirements of this company. Here are to be found what are claimed to be the largest automatic machines used with magazines. The heaviest machines of this type are designed for finishing hand wheels. The magazine above the machine is a zigzag chute which ends immediately above the chuck. The magazine will contain 15 to 20 of these hand wheels in the rough. The machine receives a hand wheel from the magazine and by means of a grip on the turret head places the wheel in the chuck. A cam arrangement times the subsequent operations. The hand wheel is faced on both sides, the rim is trued, the belt groove cut, the front of the wheel is beveled wherever necessary, reamed, &c., and as soon as the operation is completed the wheel is dropped into a bin below and another automatically takes its place. The machine thus requires no attention except to fill the magazine, and turns out a finished wheel in a trifle over three minutes. An expert machinist working rapidly would require ten hours to turn out 80 and they would not be finished as accurately as the wheels finished by this machine. Numerous other magazine tools are used for various purposes. Other automatic machines are used for the manufacture of screws, cones, nuts, studs, tapering pins and other parts capable of being handled in this way. The extent of the machinery used is shown by a few figures. The total number of machines in all departments is 1406. These comprise 248 automatic machines, 190 semiautomatic machines, 168 milling machines, 150 drilling machines, mostly multiple, 187 grinding machines, 41 molding machines, 196 special machines, 54 presses, and 172 miscellaneous machines. Orders are now in process of being filled for still more machines to be delivered this year, comprising large additions in various departments.

The National Sewing Machine Company are the only Sewing Machine manufacturers who attempt to make their own needles. One of the buildings erected during the past year was put up expressly for the purpose of affording room for the needle making department. The importance of manufacturing a supply of needles is indicated by the fact that each machine sent out is furnished with one dozen needles, which places the daily requirements of the works at easily 1000 dozen or 12,000 needles. Much special machinery has been designed and built by the company for this purpose.

In going through the works a notable feature is the absence of boys and girls. A few boys are employed in the nickel plating room and a few girls in the decorating department finishing the decoration of Sewing Machines, but all the other employees are men. This has been the settled policy of the company, to secure the very best possible results. The entire plant consists of the most substantial modern buildings, with hard wood floors throughout, finely lighted, heated and ventilated, and kept scrupulously clean. The welfare of the employees is not only well provided for, but every facility is afforded for the rapid production of uniform, accurate and high class work in large quantities.

WESTERN TUBE COMPANY.

THE WESTERN TUBE COMPANY, Kewanee, Ill., have just issued a handsome illustrated and descriptive catalogue of their goods containing 204 pages, well printed on fine paper. In it are shown goods manufactured by them, among which are full lines of Wrought Iron and Steel Pipe for steam, gas, water and air, Cast Iron and Malleable Iron Fittings, Brass Fittings, Brass and Iron Valves and Cocks and Radiators

and Coils for steam and hot water, also, square and rectangular Tubing for agricultural implements and agricultural purposes.

AMONG THE HARDWARE TRADE.

G. E. Clark has disposed of his interest in the Hardware firm of Clark Bros., Garwin, Iowa, to M. Magnussen, and the style is now Clark & Magnussen.

The attention that is being given to Hardware store arrangement is indicated in the increasing demand reported by the John D. Warren Mfg. Company, Chicago, Ill., makers of Hardware Shelving and contrivances for the accommodation and display of goods. Among the recent purchasers of the Warren system of Hardware Shelving were the following: Phillip Gross Hardware Company, Milwaukee, Wis.; A. D. Snyder, New Richmond, Ind.; Henry Williams, Rantoul, Ill.; W. B. Smith, Kane, Pa.; O. E. Hasle, Park River, N. D.; C. H. Miller Hardware Company, Huntington, Pa.; Shackletts-Thomas Hardware Company, Fulton, Ky.; F. T. Blish, South Manchester, Conn.; A. H. Beall, Williamson, W. Va.

Johnson Hardware & Implement Company, Altus, O. T., have recently opened a branch store at Navajo. Their business is retail and the line handled covers Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements, Sporting Goods, Harness, Wagons, &c.

J. B. Green has bought out the Hardware and Stove business formerly conducted by F. D. Gates at Oelwein, Iowa.

Evans Hardware Company, Statesville, N. C., have just been incorporated under the laws of that State, and will open up with a stock of Hardware, Stoves, Agricultural Implements, Paints, Oils, Varnishes, &c., on August 1. Mr. Evans is no longer connected with the Flanigan-Evans Hardware Company of Statesville, the style of which firm has been changed to J. P. Flanigan's Sons Company.

MISCELLANEOUS NOTES.

Compression Bibs, Racking and Liquor Cocks, &c.

New Departure Bell Company, Bristol, Conn., for whom John H. Graham & Co., 113 Chambers street, New York, are sole representatives, have just put on the market a full line of brass compression bibs. The particular attention of the trade is asked to the fine finish and high grade of the product. They are booking orders for racking cocks, which they expect to be able to ship by August 1, and will have lines of liquor cocks and similar goods, it is said, by September 1 next.

Automatic Ejector and Non-Ejector Shotguns.

Iver Johnson's Arms & Cycle Works, Fitchburg, Mass., and 99 Chambers street, New York, call the attention of the trade to what they refer to as a new and distinct feature of their single barrel shotgun. It is a bit of mechanism that makes their gun either automatic ejector or non-ejector in action at the option of the user. This feature consists of a small set screw located in the barrel lug, which when left tightly screwed in its place makes the gun a non-ejector, an action that is preferred when brass shells are used. If automatic ejector action is wanted this small set screw is turned to the left until its head becomes flush with the barrel lug. This action is desirable when paper shells are used.

Automobile Graphite Lubricant.

Joseph Dixon Crucible Company, Jersey City, N. J., and 68 Reade street, New York, have recently put on the market a graphite lubricant designed especially for steam and gasoline automobiles. In this connection they have just issued a pamphlet and some extra leaves in which the qualities of the compound are described.

Self Heating Sad Iron.

The Eversole Iron Company, Ft. Wayne, Ind., are manufacturing a self heating sad iron which is a new invention and has just been placed on the market. This sad iron is operated by means of gasoline, the burner being placed in the center of the iron just above the base, which is heated by the flames from the burner impinging on it. The company manufacture two sizes of irons, one being intended for family use and the other for tailors.

Wine Presses and Cider Mills.

New York Agricultural Works, Boonton, N. J., and 73 Beekman street, New York, manufacturers of agricultural machinery, call particular attention to their line of wine presses and cider mills as seasonable goods, of which they are prominent manufacturers. Special illustrated leaflets of this line are obtainable by those interested. Other specialties for which they are known are boring machines, hand trucks, lawn and field rollers, feed cutters, &c.

Improved Screw Pitch Gauge

Sawyer Tool Company, Fitchburg, Mass., have just placed on the market an improved patented screw pitch gauge, as here illustrated. The blades tapering almost to a point allow them to be used in the smallest possible hole that a gauge can be used in, yet at the same time are not weakened or liable to bend. The finer pitches are cut upon each edge of the blade, which reduces the bulk of the tool nearly one-half. The convenient form in which it is made enables the desired pitches to be found readily and renders it particularly

Screw Pitch Gauge.

a pocket tool. It is furnished with 39 pitches, as follows: 4, 4½, 5, 5½, 6, 7, 8, 9, 10, 11, 11½, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60.

The Pridmore Automatic Copying Press.

Henry E. Pridmore, Nineteenth and Rockwell streets, Chicago, has recently designed and placed on the market an automatic letter copying press, which, besides possessing the commendable features of high grade presses, has a screw mechanism which is said to be so simple and effective as to render it easily operated by a child. The press is very similar to others as far as the general outline is concerned. But even in this respect there have been a few changes, such as altering the shape and enlarging certain portions of the arch and follower, which changes, while they were intended primarily to render all points at all subject to strain unbreakable, incidentally give the press a more symmetrical appearance. The most valuable feature of the press lies in the screw or spindle. The effects produced by Mr. Pridmore's patent automatic screw are referred to as follows: 1. Owing

to the outer thread having a pitch of ⅞ to 1 inch, compared with two to the inch in the ordinary single screw press, the follower travels with practically twice the rapidity until it touches the article to be compressed. 2. As soon as the follower comes in contact with this article the outer screw ceases and the inner one, which has a pitch of eight to the inch, commences to operate and, owing to its being so fine, the amount of pressure required to make an absolutely perfect copy is obtained without the slightest exertion on the part of the operator. 3. The upper surface of the outer thread is beveled, so that when the spindle is screwed down sufficiently and the hands are removed from the hand wheel, the spindle firmly locks or wedges itself in the hub or thimble of the press arch, and the "backing off," as it is termed, of the ordinary press, is entirely overcome. Numerous experiments have been made to prove the efficiency of the press by large users of copying presses, and the results, we are advised, have been most gratifying to the

The Pridmore Automatic Copying Press.

inventor. Original copies are made by merely giving the hand wheel a slight twist, the book remaining in the press but an instant. Seven, eight, nine and ten copies of one ordinary typewritten letter are made by allowing each copy to remain in the press a second longer than the last. By the larger sizes of the press, which, of course, are just as easily operated as the 10 x 12½ or 10 x 15 size, much more satisfactory reprints are obtained. Patents have been taken out in the United States, Canada, and all European countries.

Toy Capitol Bank.

The Wrightsville Hardware Company, Wrightsville, Pa., are offering the toy bank herewith shown one-

Toy Capitol Bank.

quarter actual size. It is referred to as being practically a toy cash register. It has four compartments: One each for 1, 5, 10 and 25 cent coins. When it is desired to deposit a coin, a small lever is pressed at the right hand side, when the drawer will open. The coin is then deposited, and closing the drawer registers the deposit by a figure or figures, corresponding to the deposit made, appearing at the top, as shown in the illustration.

Jenckes Ceiling Hook.

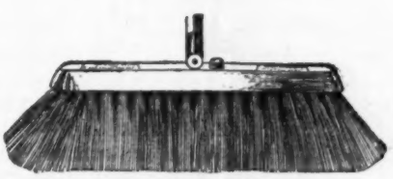
E. Jenckes Mfg. Company, Pawtucket, R. I., for whom John H. Graham & Co., 113 Chambers street, New York, are direct representatives, have just put on the market the Jenckes ceiling hook, as here illustrated,

Jenckes Ceiling Hook, Three-quarters Size.

which can also be used for many other purposes. The extreme dimensions of it are, width 3¼ inches and hight 2¾ inches. The main difference in construction from somewhat similar hooks is the twisted coil or rosette of wire at the base of the screw, which gives a good backing against whatever material it is screwed into. It is finished in copper, japan and bronze, packed one-quarter gross in a box and six gross in a case.

The World's Only Sanitary Dustless Floor Brush.

The accompanying illustration represents a dustless floor brush placed on the market by the Milwaukee Dustless Brush Company, 121 Sycamore street, Milwaukee, Wis. The brush is designed to lay the dust while sweeping instead of raising it, so as not to damage the stock in a store, the furniture in a room, or settle on the



The World's Only Sanitary Dustless Floor Brush.

floor again. This result is accomplished by the use of kerosene oil to prevent the dust rising. The brush is made of good bristles, inserted in the center of which is one row of a special fiber which, it is shown, readily absorbs and holds kerosene oil. The oil supply is carried in a metal reservoir in the top of the brush, which is so arranged as to keep the fiber constantly moist when the brush is in use, the feed being regulated by opening or closing the cap through which the reservoir is filled. The wood surrounding the reservoir is chemically treated to prevent it absorbing any of the oil. The dust is collected by means of the oil in small pellets, which can easily be taken up by a dust pan in the usual manner. The brush, the manufacturers state, can be used on any kind of floor or carpet, as it improves and hardens floors and cleans and brightens carpets. The kerosene is referred to as destroying the disease breeding germs carried by dust, and as killing moths, fleas or other insects on the floor or carpet. The brushes are made in a number of sizes to suit various requirements.

The Iron Age Removable Leaf Price Book.

The David Williams Company, 232-238 William street, New York, publishers of *The Iron Age*, have just added to their comprehensive line of hardware price books long on the market a price book with removable leaves, as here illustrated, which is especially suitable for store or office use. This book is arranged for conveniently and expeditiously recording prices and quotations, and will be known as The Iron Age Price Book I. The book is 10 x 10 inches square, has 250 leaves (500 pages), and its capacity can be increased indefinitely at the will of the owner. The covers are made of stout flexible leather of enduring quality, the upper cover

Fig. 1.—The Iron Age Removable Leaf Price Book.

having a rigid half round back, 1 inch wide and ½ inch thick, through which two ⅜-inch nickeled brass posts, firmly secured to a somewhat similar back on the bottom cover, pass, secured at the top by milled thumb nuts. In Fig. 1 will be seen the square recessed head of a lateral screw in the oval back, which is operated by a long slender key, furnished with the book, for locking the cover on. By means of the extension posts, which are supplied in sections 1 inch and ½ inch long, the book can be made to hold any reasonable number of extra leaves, by removing the cover and inserting one or more as occasion requires.

The leaves are ruled on both sides, and there are permanent leaves having projecting leather alphabetic in-

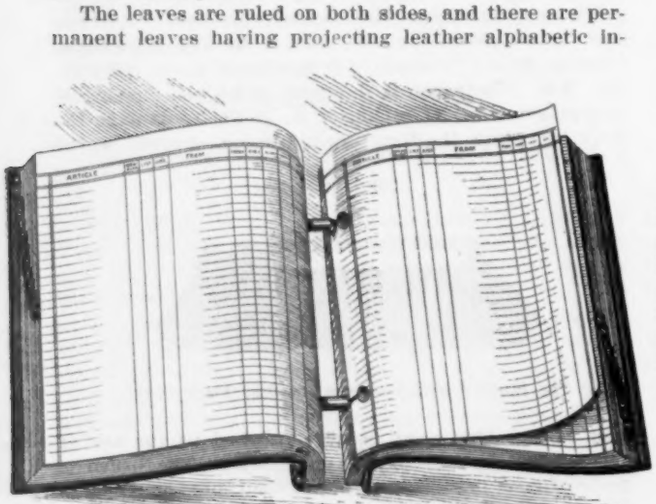


Fig. 2.—Showing Manner in Which Leaves Are Inserted or Removed.

dex tabs to properly divide the alphabet. The columns for entries are headed with the words: Article, No. or size, List, Discount, From, Freight, Cost, Retail, Job, with a blank column over 1 inch wide at the extreme back. The sheets are so prepared at the back that when the book is open a flat surface is provided, which greatly facilitates the making of entries.

A striking feature of the book is the ease with which extra leaves can be slipped in at any point, making its capacity adjustable and elastic for any one's requirements, even if no two users' wants are the same. The book is sold for $12.50 each and extra leaves can be obtained for $1.50 per 100.

Crescent Safety Razor.

The Southington Cutlery Company, Southington, Conn., and 98 Chambers street, New York, have just put on the market the Crescent safety razor, as here illustrated, Fig. 1 showing the actual size of the razor, ready for use, with an extra section to hold the blade when

Fig. 1.—Crescent Safety Razor, Actual Size.

stropping. Although not necessary, this blade holder can be joined to the regular handle if more leverage or a longer handle is desired. The company refer to this razor as exceedingly simple, effective and their greatest production. The blade is made of the best cutlery steel and the guard of nickel or German silver, instead of nickeled brass. The blade is held in position by a

Fig. 2.—Parts of Razor.

threaded spindle on the end of one section of the two-piece handle which screws into the blade, holding both blade and guard securely together, there being sufficient play in the guard for accurate adjustment. Fig. 2 shows all of the parts disassembled, and Fig. 3 the decorated hinged, felt lined metal container, actual size, the extreme dimensions of which are 2 3-16 x 1¼ x ½ inch; the weight of the entire outfit, including box, being less

Fig. 3.—Razor Box, Actual Size.

than 1½ ounces. The small compass of the razor makes it particularly desirable for tourists, or any class of individuals to whom bulk and weight are a consideration, as when away from home or not in touch with a barber. An important commercial consideration is the moderate price at which it is offered. Each metal container is put up in a neat dovetailed slide cover wood box.

Current Hardware Prices.

REVISED JULY 16, 1901.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer, are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 83⅓@83⅓&10% signifies that the price of the goods in question ranges from 83⅓ per cent. discount to 83⅓ and 10 per cent. discount.

Cut Prices.—*In the present condition of the market there is a good deal of cutting of prices by the jobbing trade, whose quotations are often lower than those of the manufacturers.*

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE INDEX SUPPLEMENT (May 3 1900), which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters Blind—

Domestic, ₩ doz. $8.00....33⅓@33⅓&10%
North's.....10%
Zimmerman's—See *Fasteners, Blind.*

Window Stop—

Ives' Patent.....25&5%
Taplin's Perfection.....50%

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anvils—American—

Eagle Anvils.....₩ ℔ 7¼@7¾¢
Hay-Budden, Wrought.....9¼@9¾¢
Horseshoe brand, Wrought.....9¼@9¾¢
Samson.....₩ ℔ 7¼@8¢
Trenton, Wrought.....₩ ℔ 8¼@8¾¢

Imported—

Peter Wright's.....9¼@9¾¢

Anvil, Vise and Drill—

Millers Falls Co., $18.00.....20%

Apple Parers—See *Parers, Apple, &c.*

Aprons, Blacksmiths'—

Hull Bros. Co.:
Lots of 1 doz.....25%
Smaller Lots.....20%
Lots of 3 doz.....30%

Augers and Bits—

Com. Double Spur.....70@..%
Boring Machine Augers.....60&10&10@70&10%
Car Bits, 12-in. twist.....60@60&10%
Jennings' Pattern Auger Bits.....50&10&5@60%
Ford's Auger and Car Bits.....40&10%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list....40%
No. 30. R. Jennings' List.....50%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits 15&10@15&10&5%
Mayhew's Countersink Bits.....45%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....50&10%
Snell's Car Bits, 12-in. twist.....60%
Wright's Jennings Bits (R. Jennings' list).....50%

Bit Stock Drills—

Standard List.....65@65&5%

Expansive Bits—

Clark's small, $18; large, $26.....50&10%
Lavigne's Clark's Pattern, No. 1, ₩ doz., $26; No. 2, $18.....50&10%
C. E. Jennings & Co., Steer's Pat.....33⅓%
Swan's.....60%

Gimlet Bits—

Common Double Cut..gro. $2.25@2.75
German Pattern.....gro. $3.25@4.50
Double Cut, makers' lists.....50&5&50&10%

Hollow Augers—

Bonney Pattern, per doz. $11.00@11.50
Ames.....25&10%
New Patent.....25&10%
Universal.....20%
Wood's Universal.....25%

Ship Augers and Bits—

Ford's.....40%
Snell's.....40%
C. E. Jennings & Co.:
L'Hommedieu's.....15&10%
Watrous'.....40%

Awl Hafts, See *Hafts, Awl.*

Awls—

Brad Awls:
Handled.....gro. $3.75@3.10
Unhandled, Shouldered.gro.63@66c
Unhandled, Patent.....gro. 66@70c
Peg Awls:
Unhandled, Patent....gro. 51@54c
Unhandled, Shouldered.gro.65@70c
Scratch Awls:
Handled, Common..gro. $3.50@4.00
Handled, Socket..gro. $11.50@12.00

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—

First Quality, best brands $5.50@5.75
First Quality, other brands $5.25@5.50
Jobbers' Special Brands:
Good Quality.....$5.00@5.25
Best Quality.....$5.25@5.75
Cheap, Handled Axes.....$5.50@5.75
Beveled, add 25c doz.

Axle Grease—See *Grease, Axle.*

Axles—Iron or Steel.

Concord, Loose Collar....4½@5c
Concord, Solid Collar....4¾@5½c
No. 1 Common.....5½@5¾c
No. 1 Com. New Style..5¼@4 c
No. 2, Solid Collar.....4¼@4½c
Nos. 11 to 14.....70@70&10%
Nos. 15 to 18.....75@75&10%
Nos. 19 to 22.....75@75&10%

Boxes, Axle—

Common and Concord, not turned.. lb. 4¼@4½c
Common and Concord, turned.... lb. 4¾@5c
Half Patent.....lb. 8@9c

Balances—Sash—Spring—

Spring Balances ... 50&10@50&10&5%
Chatillon's:
Light Spg. Balances.....40&10%
Straight Balances.....40%
Circular Balances.....50%
Large Dial.....30%
Peteuze.....50%

Barb Wire—See *Wire, Barb.*

Bars—Crow—

Steel Crowbars, 10 to 40 lb., per lb.. 2.90@3.10c

Beams, Scale—

Scale Beams, List Jan. 12, '85.30&10%
Chattillon's No. 1.....30%
Chattillon's No. 2.....40%

Beaters—Egg—

Standard Co.:
No. 5 Steel Handle Dover..₩ gro. $6.50
No. 10 Cast Handle Dover..₩ gro. $8.00
No. 10 Steel Handle Dover.₩ gro. $8 00
No. 15 Extra Heavy Steel Handle, ₩ gro. $15.00
Rival, ₩ gro.....$10.00
Taplin Mfg. Co.: ₩ gro.
No. 50 Small Family size.....$6.50
No. 100 Regular Family size.....$8.00
No. 102 Regular Family size, tinned... $9.50
No. 150 Large Family size.....$15.00
No. 152 Large Family size, tinned.... $17.00
Lyon's, Standard size.....₩ doz. $1.75
Wonder (S. S. & Co.).....₩ gro. $7.50

Bellows—

Blacksmith, Standard List.70@70&10%
C. E. Jennings & Co., Blacksmith..60&10%
C. E. Jennings & Co., Hand.....33⅓&5

Blacksmiths—

Inch..	30	32	34	36	38	40
Each	$3.50	3.75	4.25	4.80	5.35	6.15

Extra Length:
Each..$4.00 4.55 5.10 5.60 6.40 7.50

Molders—

Inch..	9	10	11	12	14	16
Doz...	$6.75	7.25	8.50	9.50	12.00	14.50

Hand—

Inch...	6	7	8	9	10	12
Doz....	$3.75	4.25	4.50	5.00	5.7	6.75

Net Prices.

Bells—Cow—

Ordinary goods.....75&5@75&10%
High grade.....70@70&10%
Jersey.....75&10%
Texas Star.....50%

Door—

Abbe's Gong.....45%
Barton Gong.....55%
Home, R. & E. Mfg. Co.'s.....55&10%
Lever and Pull, Sargent's.....40@40&10%
Yankee Gong.....55%

Hand—

Hand Bells, Polished.....60&5@66⅔&5%
White Metal.....55@55&10%
Nickel Plated.....50@5&10%
Swiss.....60@60&7½&5%
Silver Chime.....33⅓@33⅓&10%

Miscellaneous—

Farm Bells.....lb. 2@2¼c
Steel Alloy Church and School..... 50&10&5@60%
National Bell Foundry Co.:
Superior Cast Steel Church and School Bells.....50&10&5&60%
Wilmot & Hobbs Mfg. Co., Gongs.....70%

Belting—Rubber—

Agricultural (Low Grade).75&10@80%
Common Standard.....75@75&10%
Standard.....70@70&10%
Extra.....60&10&5%
High Grade.....50&10@70&10&5%
Boston Belting Co.:
Seamless Stitched, Imperial.....35&5%
Boston.....50&5%
Niagara.....60&5%

Leather—

Extra Heavy, Short Lap...50&10@60%
Regular Short Lap 60&10@60&10&5%
Standard.....60&10&10@70&5%
Light Standard.....70@70&10%

Cotton—

Rossendale-Reddaway B. & H. Co.:
Sphinx Brand.....60&10%
Durable Brand.....70%

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters.....20%
Stoddard's Lightning Tire Upsetters... 40@50%

Bicycle Goods—

John S. Long's Son's 1899 list:
Chain.....50%
Parts.....50%
Spokes.....50%
Tubes.....60%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Bit Holders—See *Holders.*

Blind Adjusters—See *Adjusters, Blind.*

Blind Fasteners—See *Fasteners, Blind.*

Blind Staples—See *Staples, Blind.*

Blocks—Tackle—

Common Wooden.....70@70&10%
Cleveland Steel.....60&10@70%
Ford's Star Brand Self Lubricating.. 60&10%
Hollow Steel, Ford's Pat. Star Brand... 50&10%
Lane's Patent Automatic Lock and Junior.....30%
Stowell's Novelty, Mal. Iron.....50%
See also *Machines, Hoisting.*

Boards Stove—

Zinc, Crystal, &c..... .. 40&10@..%

Bolts—

Carriage, Machine &c.—

Common, list Jan. 30, '95...65&10@..%
Norway Iron, $3.00, list Oct. 7, '84... 80@80&5%
Phila. Eagle, $3.00 list May 24, '99.... 80@80&10%
Bolt Ends, list Jan. 30, '95.70&7½@..%
Machine, list Oct. 1, '99.....70&7½@..%
Machine with C. P., C. & T. Nuts... 65&12½%

NOTE—*The rapid advances in manufacturers' prices enable the jobbers to cut prices freely.*

Door and Shutter—

Cast Iron Barrel, Round Brass Knob:

Inch.....	*3*	*4*	*5*	*6*	*8*
Per doz...	*$0.26*	*.30*	*.39*	*.47*	*.65*

Cast Iron Spring Foot:

Inch.....	*6*	*8*	*10*
Per doz.....	*$1.00*	*1.25*	*1.75*

Cast Iron Chain, Flat, Japanned:

Inch.....	*6*	*8*	*10*
Per doz	*$0.75*	*1.05*	*1.30*

Cast Iron Shutter, Brass Knobs:

Inch.....	*6*	*8*	*10*
Per doz.....	*$0.87*	*.80*	*1.00*

Wrought Barrel Brass Knob:

Inch.....	*3*	*4*	*5*	*6*	*8*
Per doz ..	*$0.44*	*.50*	*.61*	*.70*	*1.23*

Wrought Barrel .....70&10@75&5%
Wrought " Bronzed.50&5@50&10%
Wrought Flush, B. K..50&10@60&10%
Wrought Shutter...40&10&10@60&5%
Wrought Square Neck.....60@50&10%
Wrought Sunk.....50@50&10%
Ives' Patent Door.....60%

Stove and Plow—

Plow .....60&10@..%
Stove.....77½%

Tire—

Common.....77½%
Norway Iron.....80@80&5%
American Screw Company:
Norway Phila., list Oct. 16, '84....82½%
Eagle Phila., list Oct. 16, '84.....85%
Bay State, list Dec. 28, '99.....77½%
Franklin Moore Co.:
Norway Phila, list Oct. 16, '84..82½%
Eagle Phila., list Oct. 16, '84.....85%
Eclipse, list Dec. 28, '99.....77½%
Port Chester Bolt & Nut Company
Empire, list Dec. 28, '99.....77½%
Keystone Phila. list Oct. '84.....85%
Norway Phila, list Oct. '84.....82½%

Borers, Tap—

Borers Tap, Ring, with Handle:

Inch.....	*1¼*	*1½*	*1¾*	*2*
Per doz..	*$4.50*	*5.00*	*5.75*	*7.25*
Inch		*2¼*		*2½*
Per Doz.....		*$8.65*		*11.50*

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.65; No. 3, $2.50 each.....25%

Boring Machines—*See Machines, Boring.*

Boxes Mitre—

C. E. Jennings & Co.....40%
Seavey's, per doz., $90.....40%

Braces—

NOTE.—*Most Braces are sold at net prices.*
Common Ball, American...$1.15@1.25
Barber's.....50&10&10@60&10%
Fray's Genuine Spofford s.....60%
Fray's No. 70 to 120, 81 to 123, 207 to 414.....60%
C. E. Jennings & Co.....50&10%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Patent..50%
P., S. & W. Co Peck's Patent..... 60&10@65&5%

Brackets—

Wrought Steel.....75&5@75&10%
Bradley's Wire Shelf:
Full cases.....30%
Broken cases.....75&10%
Griffin's Pressed Steel.....75%
Griffin's Folding Brackets.....70&10%

Bright Wire Goods—See *Wire and Wire Goods.*

Broilers—

Wire Goods Co.....75%

Buckets, Well and Fire—See *Pails*

Bucks, Saw—

Boss.....₩ gro. $48.00
Hoosier.....₩ gro. $36.00

Bull Rings—See *Rings, Bull.*

Butts—Brass—

Wrought list Sept., '98.....40@40&5%
Cast Brass, Tiebout's.....50%

Cast Iron—

Fast Joint, Broad.....50@50&10%
Fast Joint, Narrow.....50@50&10%
Loose Joint.....70&5@70&10%
Loose Pin.....70&5@70&10%
Mayer's Hinges.....70&5@70&10%
Parliament Butts.....70&5@70&10%

Wrought Steel—

Table and Back Flaps...60&10%
Narrow and Broad.....60&10%
Inside Blind.....66⅔%
Loose Pin.....70&10%
Loose Pin, Ball and Steeple Tip .....70&10%
Japanned, Ball Tip Butts...60%
Bronzed Wrt. Nar. and Inside Blind Butts.....45%

Extra 25@ 45&5%

Cages, Bird—

Hendryx, Brass:
3000, 5000, 1100 series.....5%
1200 series.....33⅓%
900, 300, 600 and 900 series.....40&10%
Hendryx Bronze:
700, 900 series.....40&10%
Hendryx Enameled.....40&10%

Calipers—See *Compasses, Calks, Toe and Heel—*

Blunt, 1 prong.....per lb. 4 @4½c
Sharp, 1 prong.....per lb. 4½@4¾c
Perkins' Blunt.....₩ ℔ 5 ¢
Perkins' Sharp.....₩ ℔ 5½¢

Can Openers—See *Openers, Can*

Cans, Milk—

	5	8	10	gal.
Illinois Pattern.	$1 75	2.10	2.25	each.
Iowa Pattern...	....	2.40	2.60	each.
Buffalo Pattern.	....	2.30	2.50	each.
	20	30	40	qts.
New York Patt'rn	3.00	3.25	3.40	each.
Baltimore Patt'rn	2.50	2.85	3.10	each.

Cans, Oil—

Buffalo Family Oil Cans:

3	5	10 gal.
$48.00	60.00	108 gro

Caps—Percussion—

Eley's E. B.	*.60c*
G. D	*per M 32@34c*
F. L	*per M 37@40c*
G. E	*per M 47@50c*
Musket	*per M 57@60c*

Primers—

Berdan Primers, $1.00.....6%
B. L Caps (*Sturtevant Shells*) *$1.00.....6%*
All other primers ... $1.10@$1.12

Carpet Stretchers—See *Stretchers, Carpet.*

Cartridges—

Blank Cartridges:
22 C. F., $5.50 ..... 10c&5@10c&10%
38 C. F., $7.00 ..... 10c&5@10c&10%
22 cal. Rim, $1.50 ..... 10c&5@10c&10%
32 cal. Rim, $2.75 ..... 10c&5@10c&10%
B. B. Caps, Con., Ball Swgd. $1.80@1.85
B. B. Caps, Round Ball ... $1.10@1.15
Central Fire ..... 25@25c&5%
Pistol and Rifle ..... 15c&5@15c&10%
Primed Shells and Bullets ..... 15c&5@15c&10%
Rim Fire Sporting ..... 50@50c&5%
Rim Fire, Military ..... 15c&5@15c&10%

Casters—

Bed ..... 70@70c&10%
Plate ..... 75@75c&10%
Philadelphia ..... 75@75c&10%
Boss ..... 70&10%
Boss Anti-Friction ..... 70&10%
Martin's Patent (Phœnix) 45%
Payson's Anti-Friction ..... 70&10&10%
Standard Ball Bearing 45%
Tucker's Patent, low list 30%

Cattle Leaders—

See *Leaders, Cattle.*

Chain, Coil—

NOTE.—*The following prices are f. o. b. Pittsburgh. Manufacturers in quoting usually add freight to destination.*

American Coil. Cask lots:

5-16	*¼*	*5-16*	*⅜*	*7-16*	*½*	*9-16*
7.15	*5.55*	*4.55*	*3.70*	*3.55*	*3.45*	*3.40*
⅝	*¾*	*⅞ to 1*		*1⅛ to 1¼ inch.*		
3.40	*3.35*	*3.35c. per lb.*		*3.60 per 100 lb.*		

Less than Cask lots add 25c.
German Coil, list July 24, '97 ..... 60&10c&10%

Halters and Ties—

Halter Chains ..... 50c&10%
German Halter Chain, list July 24, '97 ..... 60c&10c&10%
Cow Ties 60%

Trace, Wagon, &c.—

Traces, Western Standard: 100 pair
6½—6-3, Straight, with ring...$30.00
6½—6-2, Straight, with ring.. $31.00
6½—8-2, Straight, with ring.. $35.00
6½—10-2, Straight, with ring..$38.00
Add 2¢ per pair for Hooks.
Twist Traces 2¢ per pair higher than Straight Link.
Trace, Wagon and Fancy Chains .. 50&10@50c&10c&5%

Miscellaneous—

Jack Chain, list July 10, '93:
Iron ..... 60@60c&10%
Brass ..... 60@60c&10%
Safety Chain ..... 70 &5@70c&10%
Gal. Pump Chain ..... *lb.* 4½@4¾c
Covert Mfg. Co.:
Breast ..... 35&2%
Halter ..... 35&2%
Heel ..... 35&2%
Rein ..... 35&2%
Stallion ..... 35&2%
Covert Sad. Works:
Breast 70%
Halter 70%
Hold Back 70%
Rein 70%
Oneida Community:
Am. Coil and Halters ..... 50&10&5@40%
Am. Cow Ties ..... 35&5@40&5%
Eureka Coil and Halter ..... 60@60&5%
Niagara Coil and Halters ..... 60@60&5%
Niagara Cow Ties ..... 45&5@45&10&5%
Wire Goods Co.:
Dog Chain ..... 60&10%
Universal Dbl-Jointed Chain 50%

Chalk—(From Jobbers.)

Carpenters' Blue ..... *gro.* 42@45c
Carpenters', Red ..... *gro.* 37@40c
Carpenters', White ..... *gro.* 33@35c
See also Crayons.

Chalk Lines—See *Lines.*

Checks, Door—

Bardsley's ..... 40&10%
Columbia ..... 50&10%
Eclipse ..... 60@60&10%

Chests Tool—

American Tool Chest Co.:
Boys' Chests, with Tools 55%
Youths' Chests, with Tools 40%
Gentlemens' Chests, with Tools 30%
Farmers', Carpenters', etc., Chests, with Tools 20%
Machinists' and Pipe Fitters' Chests, Empty 50%
C. E. Jennings & Co.'s Machinists' Tool Chests 20%

Chisels—Socket Framing and Firmer

Standard List ..... 70c&5@70c&10%
Buck Bros 30%
Charles Buck 30%
C. E. Jennings & Co. Socket Firmer No. 10 ..... 60&10%
C. E. Jennings & Co. Socket Framing No. 15 ..... 60&10%
Swan's ..... 70&5%
L. & I. J. White ..... 30@30&5%

Tanged—

Tanged Firmers ..... 40c&5@40c&10%
Buck Bros 30%
Charles Buck 30%
C. K. Jennings & Co. Nos. 191, 181 ... 25%
L. & I. J. White, Tanged ..... 25&5%

Cold—

Cold Chisels, good quality..lb. 13@15c
Cold Chisels, fair quality..lb. 11@12c
Cold Chisels, ordinary ..... *lb.* 8@9c

Chucks—

Beach Pat., each $8.00 ..... 30%
Massey's Planer and Milling ..... 15@20%
Skinner Patent Chucks:
Combination Lathe Chucks 40%
Drill Chucks, Patent and Standard 30%
Drill Chucks, New Model ..... 2 %
Independent Lathe Chucks 40%
Improved Planer Chucks 25%
Universal Lathe Chucks 40%
Face Plate Jaws 40%
Standard Tool Co.:
Improved Drill Chuck 45%
Union Mfg. Co.:
Combination 40%
Car Drill 30%
Geared Scroll 30%
Independent 40%
Union Drill 30%
Universal 40%
Face Plate Jaws 35%

Clamps—

Adjustable, Hammers' ..... 20@20&5%
Cabinet, Sargent's ..... 50&10%
Carriage Makers', P., S. & W. Co. 40&10%
Carriage Makers' Sargent's ..... 50&10%
Beaty, Parallel ..... 33⅓&10%
Lineman's, Utica Drop Forge & Tool Co 40%
Saw Clamps, see *Vises, Saw Filers'.*

Cleaners Sidewalk—

Star Socket, All Steel ..... ₱ doz. $4.00 net
Star Shank, All Steel ..... ₱ doz. $3.75 net
W. & G. Snaur, All steel, 7½ in. ₱ doz., $3.05; 8 in., $3.10; 8½ in., $3.25.

Cleavers, Butchers'—

Foster Bros 30%
New Haven Edge Tool Co.'s 40%
Fayette R. Plumb ..... 33⅓&10%
P., S & W ..... 50&5&5%
L. & I. J. White 30%

Clippers—

Chicago Flexible Shaft Company
Handy Toilet ..... ₱ doz. $7.20
Mascotte Toilet ..... ₱ doz. $5.40
Monitor Toilet ..... ₱ doz. $9.00
Stewart's Patent ..... ₱ doz. $10.00

Clips Axle—

Eagle and Superior ¼ and 5-16 inch ..... 70c&10%
Norway, ½ and 5-16 inch.. 70@70c&10%

Cloth and Netting, Wire—See *Wire, &c.*

Cocks, Brass—

Hardware' list (Globe, Kerosene, Racking, &c.) ..... 65c&10%

Coffee Mills—See *Mills, Coffee.*

Collars Dog—

Brass, Pope & Stevens' list 40%
Embossed, Gilt, Pope & Stevens' list 30&10%
Leather Pope & Stevens' list 40%

Compasses Dividers, &c.

Ordinary Goods ..... 70c&10@75%
Bemis & Call Hdw. & Tool Co.:
Dividers 65%
Calipers, Call's Patent Inside 55%
Calipers, Double 65%
Calipers, Inside or Outside 65%
Calipers, Wing 60%
Compasses 50%
J. Stevens A. & T. Co ..... 35&10%

Compressers Corn Shock—

J. B. Hughes' ₱ doz $2.50

Conductor Pipe, Galva.—

L. C. L. to Dealers:

Territory.	*Not nested.*	*Nested.*
Eastern	*70c&2½%*	*70c&5%*
Central	*65c&10%*	*70%*
Southern ..	*65%*	*65c&2½%*
S. Western.	*60c&12½%*	*60c&15%*

Terms, 2% for cash.
Jobbers receive extra 12½&2½ on carloads loose, and extra 12½ on carloads crated.
See also *Eave Troughs.*

Coolers, Water—

Nos....	2	3	4	6
Labrador	$11.50	$14.00	$17.50	$20.00
8 gal.	$2.00			
Nos....	2	3	4	6	8
Iceland..	$23.00	$25.00	$30.00	$37.50
10	14 gal.			
$57.00	$72.00			

Coopers' Tools—

See *Tools, Coopers'.*

Cord—Sash—

Braided, Drab ..... *lb.* 25c
Braided, White, Common, lb 17½@18c
Cable Laid Italian..lb. A, 18c; *B,* 16c
Common India ..... *lb* 9 @9½c
Cotton Sash Cord, Twisted ....12@16c
Patent Russia ..... *lb.* 13½@15c
Cable Laid Fussia ..... *lb.* 13½@14c
India Hemp, Braided ..... *lb* 14@15c
India Hemp, Twisted ..... *lb.* 10@12c
Patent India, Twisted ..... *lb.*10@12c
Pearl Braided, cotton ..... ₱ b 17@18¢
Massachusetts, White ..... ₱ b 22½¢
Massachusetts, Drab ..... ₱ b 26½¢
Eddystone Braided Cotton ..... ₱ b 19¢
Harmony Cable Laid Italian ..... ₱ b 18¢
Ossawan Mills:
Crown, Solid Braided White ..... ₱ b 22¢
Braided, Giant, White ..... ₱ b 20¢
Peerless:
Cable Laid Italian ..... 16¢
Cable Laid Russian ..... 14¢
Cable Laid India ..... 12¢
Braided India ..... 18¢
Phœnix, White ..... 19¢
Samson:
Braided, Drab Cotton ..... ₱ b 32½¢
Braided, Italian Hemp ..... ₱ b 32½¢
Braided, Linen ..... ₱ b 40¢
Braided, White Cotton, Spot ₱ b 28½¢
Silver Lake:
A quality, Drab, 40¢ 15%
A quality, White, 35¢ 15%
B quality, Drab, 35¢ 15%
B quality, White, 30¢ 15%
Italian Hemp, 40¢ 15%
Linen, 57½¢ 15%

Wire, Picture—

Braided or Twisted ..... 85@85c&10%
Note.—There is a good deal of confusion in lists, some using old list and others the new list.

Corn Knives and Cutters—See *Knives, Corn.*

Corn Planters—See *Planters, Corn—*

Crackers, Nut—

Little Giant ..... ₱ gr. $24.00

Cradles—

Grain 50%

Crayons—

White Round Crayons. gross. 5½@6c
Cases, 100 gro., $4.50, at factory.
D. M. Steward Mfg. Co.
Metal Workers' Crayons, gr. $2.50
Soapstone Pencils, round, flat or square ..... gr. $1.50
Rolling Mill Crayons ..... gr. $2.50
Railroad Crayons (composition) gr. $2.00
Case lots 25%
See also *Chalk.*

Creamery Pails—See *Pails, Creamery.*

Crooks, Shepherds'—

Fort Madison, Heavy ..... ₱ doz. $7.00
Fort Madison, Light ..... ₱ doz. $6.50

Crow Bars—See *Bars, Crow.*

Cultivators—

Victor Garden ..... ₱ doz. $10.00

Cutlery Table—

International Silver Company:
No. 12 Medium Knives, 1847, ₱ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor ..... ₱ doz. $3.00
Wm. Rogers & Son ..... ₱ doz. $2.50
Simeon L. & Geo. H. Rogers Company:
12 dwt. Medium Knives ..... ₱ doz. $3.00
No. 77 Medium Knives ..... ₱ doz. $2.50

Cutters—Glass—

H. H. Mayhew Co 40%
Smith & Hemenway Co 50%

Meat—

Hale's..Nos. 11 & 111 12 & 112 13 & 113
Per doz .. $10,80 13 20 18.00
American 30%

Nos	1	2	3	4	5	6
Each	$5	$7	$10	$25	$50	$60

Connecticut 50%

Nos..	20	40	60	8	10	12
Each	$1.75	2.00	2.25	3.00	3.00	4.00

Enterprise ..... 25@25&7½%

Nos	5	10	12	23	32
Each	$2	$3	$2.50	$4	$6

Dixon's, ₱ doz ..... 30&10@40%

Nos..	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Home No. 1, ₱ doz. $22.75 ..... 50&10%
Little Giant, ₱ doz ..... 33⅓&5@40%

Nos.	305	310	312	320	322
	$35.00	$48.00	$44.00	$75.00	$68.00

Sterling ..... 33⅓&5%

Nos	1	2
Each	$2.00	$2.50

New Triumph No. 605, ₱ doz. $24.00 ..... 30&10@40%
Woodruff's, ₱ doz ..... 30&10@40%

Nos	100	150
	$15.00	$18.00

Chadborn's Smoked Beef Cutter, ₱ doz. $60.00
Enterprise Beef Shavers ..... 25@30%

Slaw and Kraut—

Henry Disston & Sons:
Slaw, Corn Grater, &c 40%
Kraut Cutters 24 x 7, 26 x 8, 30 x 9 .. 55%
Kraut Cutters 36 x 12, 40 x 12 ..... 40%
Tucker & Dorsey Mfg. Co.:
Kraut Cutters 40%
Slaw Cutters, 1 Knife, ₱ gr. ..$18@$30
Slaw Cutters, 2 Knife, ₱ gr. ..$22@$36

Tobacco—

All Iron, Cheap ..... *doz. $4.25@$4.50*
Enterprise ..... 25&30%
National, ₱ doz. $21.00 ..... 40%
Sargent's, ₱ doz., No. 2 ..... 45&10%
Sargent's No. 2 and 21 ..... 50&10%

Washer—

Appleton's, ₱ doz. $16.00 ... 50&10&10%
Bonney's 40%

Diggers, Post Hole, &c.—

Dalbey Post Hole Auger...per doz., $9.00
Iwan's Improved Post Hole Auger.... 40%
Iwan's Perfection Post Hole Digger... ₱ doz. $9.00
Kohler's Universal ..... ₱ doz. $14.00
Kohler's Little Giant ..... ₱ doz. $14.00
Kohler's Hercules ..... ₱ doz. $12.00
Kohler's Invincible ..... ₱ doz. $10 00
Kohler's Rival ..... ₱ doz. $9.00
Kohler's Pioneer ..... ₱ doz. $9.00
Never-Break Post Hole Diggers, ₱ doz. $24.00 ..... 60%
Samson, ₱ doz. $34.00 ..... 25%

Dividers—See *Compasses.*

Dog Collars—See *Collars, Dog.*

Door Checks—See *Checks, Door.*

Door Springs—See *Springs, Door.*

Doors, Screen—

Porter's Plain, No. 6 ..... ₱ doz. $4 50
Porter's Ornamental, No. 70. ₱ doz. $10.00

Drawers, Money—

Tucker's Pat. Alarm Till No. 1, ₱ doz. $18; No. 2, $15; No. 3, $12; No. 4, $18.

Drawing Knives—See *Knives, Drawing.*

Drills and Drill Stocks—

Common Blacksmiths' Drill..each $1.50@$1.75
Blacksmiths' Self-feeding.....each $3.75@$4.00
Breast, Millers Falls, each $3.00 .15&10%
Breast, P., S. & W ..... 40@40&5%
Goodell Automatic Drills..40&5@40&10%
Johnson's Automatic Drills Nos. 2 and 3 ..... 10%
Johnson's Drill Points ..... 25&10%
Ratchet, Curtis & Curtis 25%
Ratchet, Parker's 40%
Ratchet, Weston's ..... 40@25%
Ratchet, Whitney's, P. S. & W .. 40&10%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00 ..... 33⅓&5%

Twist Drills—

Standard List ..... *60c&5@65c&5%*

Drill Bits or Bit Stock Drills—See *Augers and Bits.*

Drill Chucks—See *Chucks.*

Dripping Pans—See *Pans, Dripping.*

Drivers, Screw—

Screw Driver Bits ...per doz. 45@70c
Halsey's Screw Holder and Driver, ₱ doz. 2¼-inch, $6; 4-in., $7.50 6-in., $9..40%
Buck Bros 30%
Buck Bros' Screw Driver Bits 30%
Champion ..... 40&10%
Douglass Mfg. Co ..... 20@20&10%
Fray's Hol. H'dle Sets, No. 3, $12.00 50%
Gay's Double Action Ratchet 35%
Goodell's Automatic ..... 50&10&10@50&10&10&5%
Mayhew's Black Handle 50%
Mayhew's Monarch ..... 40&10%
New England Specialty Co ..... 50&10%
Sargent & Co.'s:
Nos. 1, 50, 55 and 60 ..... 50&10&10%
Nos. 20 and 40 ..... 60½&10%
Smith & Hemenway Co ..... 40&5%
Stanley's R. & L. Co.'s:
No. 64, Varnished Handles ..... 60&10%
No. 86 ..... 70&10%
Swan's:
Nos. 65 to 68 ..... 50%
No. 40 ..... 40&10%
Nos. 25, 35 and 45 ..... 20&10&10%

Eave Trough Galvanized

Territory. *L. C. L*
Eastern ..... 75c&10% } Carloads extra 12½¢
Central ..... 75c&7½% }
Southern ..... 70c&12½% }
S. Western ..... 70c&10% }
Terms, 2% for cash.
See also *Conductor Pipe and Elbows.*

Egg Beaters—See *Beaters, Egg*

Egg Openers—See *Openers, Egg.*

Elbows and Shoes—

Factory shipments ..... 60@60&10%
Perfect Elbows (S. S. & Co.) 40%

Emery, Turkish—

	4 to 46	*54 to 150*	*Flour*
Kegs ..... *lb.*	*5c*	*5½c*	*5¾c*
¼ Kegs .... *lb.*	*5½c*	*5¾c*	*5¾c*
Kegs .... *lb.*	*5c*	*6c*	
5-lb cans, 10 in case	*6 c*	*7c*	*6c*
10-lb. cans, less than 10 ...	*10c*	*10c*	*8c*

NOTE.—*In lots 1 to 3 tons a discount of 10% is given.*

Enameled and Tinned Ware—See *Ware, Hollow.*

Escutcheon Pins—See *Pins, Escutcheon.*

Extractors, Lemon Juice—See *Squeezers, Lemon.*

Fasteners, Blind—

Zimmerman's ..... 50&10%

Faucets—

Cork Lined ..... 70c&5@70c&10c&5%
Metallic Key, Leather Lined ..... 70@70c&10%
Red Cedar ..... 50@50c&5%
B. & L. B. Co.:
Lockport, Metal Plug, reduced list 60&5%
Star ..... 60@60&5%
Star, Metal Plug new list ..... 40@40&5%
West's Lock, Open and Shut Key 50&10%
John Sommer's Peerless Tin Key 40%
John Sommer's Boss Tin Key 50%
John Sommer's Victor Metal Key. 50&10%
John Sommer's Duplex Metal Key 60%
John Sommer's Diamond Lock 40%
John Sommer's I. X. L. Cork Lined .. 50%
John Sommer's Reliable Cork Lined 50&10%
John Sommer's Common Cork Lined. 70%
John Sommer's Chicago Cork Lined.. 60%
John Sommer's O. K. Cork Lined 50%
John Sommer's Perfection Cedar 40%
McKenna, Brass:
Burglar Proof, N. P. 35%
Improved, ¾ and ⅞ inch 35%
Self Measuring:
Enterprise, ₱ doz. $36.00 ..... 40&10%
Lane's, ₱ doz. $36.00 ..... 40&10%
National Measuring, ₱ doz. $36.00... 40%

Felloe Plates—See *Plates, Felloe.*

Files—Domestic—

List revised Nov. 1, 1899.

Best Brands ..... 70@75c&5%
Good Brands ..... 75&10@75c&10c&10%
Fair Brands ..... 80@80c&10%
Second Quality ..... 80c&10@80c&25%

Imported—

Stubs' Tapers, Stubs' list, July 24, '97 ..... 25%

Fixtures, Grindstone—

Net Prices:

Inch.....	*15*	*17*	*19*	*21*	*24*
Per doz.	*$2.60*	*2.75*	*3.00*	*3 50*	*4.50*

Stowell's Giant Grindstone Hanger ..... ₱ doz. $6.00
Stowell's Grindstone Fixtures 50%
P., S. & W. Co ..... 50@50&5%
Reading Hardware Co ..... 30&20&10%
Sargent's ..... 60&10&10%

Fodder Squeezers—See *Squeezers, Fodder.*

Forks—

Sept. 1, 1900, list.
Grain or Barley Forks, 12 to 20 inches ..... 70c&5%
Hay, 2 tine 65%
Hay, 3 tine 66⅔%
Hay, 4 tine. Header and Barley Forks, 13 to 16 inches 66⅔%
Manure, 4 tine 70%
Manure, 5 and 6 tine 70%
Spading ..... 70c&5%
Iowa Dig-Ezy Potato 65%
Victor, Hay 66⅔%
Victor, Manure 70%
Victor, Header ..... 60&30%
Champion, Hay 66⅔%
Champion, Manure 70%
Columbia, Hay ..... 66⅔&5%
Columbia, Manure 70%
Columbia, Spading 70%
Hawkeye Wood Barley 4 tine ₱ doz. $5.00; 6 tine, $6.00.
W. & C. Potato Digger 65%
Acme Hay ..... 60&10&7½%
Acme Manure, 4 tine ..... 60&20&10%
Acme Manure, 6 tine ..... 60&5&10&2%
Dakota Header ..... 75&15&5%
Jackson Steel Barley ..... 65&15&5%
Kansas Header 66⅔%
W. & C. Favorite Wood Barley 4 tine, ₱ doz., $5.00; 6 tine, $6.00
Plated.—See *Spoons.*

Frames—Saw—

Red, Polished and Varnished..doz. $1.15@$1.25
White ..... *doz.* 75@80c

Screens and Frames—See *Screens.*

Freezers, Ice Cream—

Qts...	*2*	*3*	*4*	*6*	*8*	*10*
Best	*$1.45*	*1.65*	*1.95*	*2.40*	*3.00*	*4.00*
Good	*$1 25*	*1.40*	*1.70*	*2.15*	*2.75*	*3.75*
Fair	*$1.00*	*1.10*	*1 50*	*1.75*	*2.30*	*3.00*

Fruit and Jelly Presses—See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse—

	Per 1000 Feet.
Hemp Fuse	*$2.60*
Cotton Fuse	*2.90*
Single Taped Fuse	*3.25*
Double Taped Fuse	*4.20*
Triple Taped Fuse	*5.00*

10c&5%

Gates, Molasses and Oil—
Stebbins' ..... 80&10@80&10&10%

Gauges—
Marking, Mortise, &c. ..... 55&10@55&10&10%
Barrett's Comb. Roller Gauge ..... ₩ doz. $6.75@7.25
Stanley R. & L. Co.'s Butt & Babbet Gauge ..... 30&10%
Wire, Brown & Sharpe's 25%
Wire, Morse's 25%
Wire P., S. & W. Co ..... 80@30&10%

Gimlets—
Nail, Metal, Assorted, gro. $1.40@1.75
Spike, Metal, Assorted gro. $3.00@3.50
Nail, Wood Handled, Assorted, gro. $4.00@4.25
Spike, Wood Handled, Assorted gro. $5.00@5.25

Glass, American Window
Jobbers' List, Jan. 21, 1901.
Less than Carloads ..... 80&10%
Carloads ..... 85&5%
3000 Boxes 87%

Glue—Liquid, Fish—
List A, Bottles or Cans, with Brush. 37½@50%
List B, Cans (½ pts., pts., qts.) ..... 33½@38%
List C, Cans (½ gal., gal.) ..... 35@45%
International Glue Co. (Martin's) ..... 40&10@50%

Glue Pots—See *Pots, Glue.*

Grease, Axle—
Common Grade ..... *gro.* $5.00@6.00
Dixon's Everlasting ..... 10-lb pails, ea. 85¢
Dixon's Everlasting, in bxs. ₩ doz. 1 lb $1.20; 2 lb $2.00
Snow Flake: 1 qt. cans, per doz. $2.00; 2 qt., $3.20; 1 gal. cans per doz. $6.00; 5 gal. $16.00; 5 gal. $24.00 } 20%

Grindstones—
Bicycle Grindstones, each ..... $2.50@3.00
Pike Mfg. Co:
Improved Family Grindstones per inch, per doz. ..... $2.00 } 33⅓&5
Pike Mower Knife and Tool Grinder, each $6.00
Velox Ball Bearing, mounted, Angle Iron Frames ..... each, $3.25

Guards, Snow—
Cleveland Wire Spring Co.:
Galv. St ₩ 1000 ..... $9.00
Copper ₩ 1000 ..... $18.00

Gun Powder—See *Powder.*

Hack Saws—See *Saws.*

Hafts, Awl—
gro.
Peg Patent, Leather Top ..... $4.90@5.25
Peg Patent, Plain Top ..... $3.50@3.75
Sewing, Brass Ferrule ..... $1.50@1.60
Saddlers', Brass Ferrule ..... $1.35@1.45
Peg, Common ..... $1.25@1.35
Brad, Common ..... $1.50@1.75

Halters and Ties—
Covert Mfg. Co.:
Web ..... 45&2%
Jute Rope ..... 45&2%
Sisal Rope ..... 30&2%
Covert's Saddlery Works:
Web and Leather Halters 70%
Jute and Manila Rope Halters 70%
Sisal Rope Halters ..... 60&20%
Jute, Manila and Cotton Rope Ties 70%
Sisal Rope Ties ..... 60&20%

Hammers—
Handled Hammers—
Heller's Machinists' ..... 50@50&5%
Heller's Farriers ..... 50@50&5%
Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75 ..... 40&10%
Peck, Stow & Wilcox ..... 50&10%
Fayette R. Plumb:
Plumb, A. E. Nail ..... 40&10&7½%
Engineers' and B. S. Hand ..... 60&10&2½%
Machinists' Hammers 60%
Riveting and Tinners' ..... 40&10&7½%
Sargent's C. S. New List 45%

Heavy Hammers and Sledges—
3 lb. and under ... *lb. 45c* / *3 to 5 lb* ... *lb. 35c* } 30@10@30
Over 5 lb ... *lb. 30c* } &10&5%
Wilkinson's Smiths' ..... 9½@c.10c lb.

Handcuffs and Leg Irons
See *Police Goods.*

Handles—
Agricultural Tool Handles—
Axe, Pick, &c ..... 60@60&10%
Hoe Rake, Fork, &c ..... 60@60&10%
Shovel, &c., Wood D Handle ..... 50@50&5%
Cross-Cut Saw Handles—
Atkins' ..... 40&5%
Champion ..... 45@45&10%
Disston's 50%
Mechanics' Tool Handles—
Auger, assorted ..... *gro.* $2.30@$2.50
Brad Awl ..... *gro.* $1.25@$1.50
Chisel Handles:
Apple Tanged Firmer, gro. ass'd. $2.25@$2.35; *large,* $2.50@$2.60.
Hickory Tanged Firmer, gro. ass'd. $1.75@$2.20; *large,* $2.50@$2.70.
Apple Socket Firmer, gro. ass'd, $1.70@$1.85; *large,* $2.00@$2.25
Hickory Socket Firmer, gro. ass'd. $1.60 @ $1.75; *large,* $1.75 @ $2.00
Hickory Socket Framing, gro. ass'd. $2.50@$2.75; *large,* $2.65@$2.85
File, assorted ..... *gro.* $1.00@$1.15
Hammer, Hatchet, Axe, &c 60%
Hand Saw, Varnished, doz. 70@75c
Not Varnished ..... 55@60c
Plane Handles:
Jack, doz. 35c; Jack Bolted ..... 55@60c
Fore, doz. 35@38c; Fore, Bolted ..... 70@75c

Hangers—
Barn Door, New Pattern, Round Groove, Regular:

Inch	3	4	5	6	8
Doz	$0.85	1.30	1.60	1.95	2.15

Barn Door, New England Pattern, Check Back, Round Groove, Regular:

Inch	3	4	5	6
Doz	$1.45	1.90	2.55	3.10

Chicago Spring Butt Co.:
Friction 25%
Oscillating 25%
Big Twin 25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door 50%
Elevator 40%
Railroad 55%
Cronk Hanger Co.:
Loose Axle 60%
Roller Bearing ..... 60&10%
Lane Bros.:
Parlor, Ball Bearing $4.00
Parlor, Standard $3.25
Parlor, New Model $2.75
Parlor New Champion $2.25
Barn Door, Standard ..... 60&10%
Covered ..... 50&10&10&5%
Special ..... 60&10%
Lawrence Bros.:
Advance 60%
Cleveland 70%
Crown 60%
New York 60%
Peerless ..... 60&10%
Sterling 60%
McKinney Mfg. Co.:
No. 1, Special, $15 ..... 60&10%
No. 2, Standard, $18 ..... 60&10%
Stowell Mfg. and Foundry Co.:
Acme Parlor Ball Bearing 40%
Atlas ..... 50&10%
Badger Barn Door 50%
Baggage Car Door 50%
Climax Anti-Friction 50%
Elevator 40%
Express 50%
Interstate ..... 50&10%
Lundy Parlor Door 50%
Matchless ..... 50&10%
Nansen ..... 60&10%
Stowell Parlor Door 50%
Railroad 50%
Street Car Door 50%
Steel, Nos. 300, 404, 500 ..... 40&15%
Wild West 50%
Zenith for Wood Track 50%
Taylor & Boggis Foundry Co.:
Kidder's ..... 50&15&10&5%
Columbian Hdw. Co.:
American Trackless ..... 33⅓&10%
Wilcox Mfg. Co.:
Bike Roller Bearing ..... 60&10%
C. J. Roller Bearing ..... 60&10%
Cycle Ball Bearing 50%
Dwarf Ball Bearing 40%
Ives, Wood Track ..... 60&10%
L.T. Roller Bearing ..... 60&10&5%
New Era Roller Bearing ..... 50&10%
O. K. Roller Bearing ..... 60&10&5%
Prindle, Wood Track 60%
Richards' Wood Track 60%
Richards' Steel Track ..... 50&10%
Spencer Roller Bearing ..... 60&10%
Tandem Nos. 1 and 2 ..... 60%
Underwriters' Roller Bearing 40%
Wilcox Auditorium Ball Bearing 20%
Wilcox Barn Trolley No. 123 ..... 40%
Wilcox Fire Trolley, Roller Bearing 30%
Wilcox Le Roy Noiseless Ball Bearing 40%
Wilcox New Century ..... 50&10&10%
Wilcox Trolley Ball Bearing 40%

Harness Menders—See *Menders.*

Harness Snaps—See *Snaps.*

Hasps—
McKinney's Perfect Hasp ₩ doz. 50%
Wrought Hasps, Staples, &c.—See *Wrought Goods.*

Hatchets—
Best Brands ..... 50@50&10%
Cheaper Brands ..... 60@60&10%
Note.—Net prices often made.

Hay and Straw Knives—
See *Knives.*

Hinges—
Blind and Shutter Hinges—
Surface Gravity Locking Blind: (Victor; National; 1883 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)

No.	1	3	5
Doz. pair	$0.75	1.45	2.90

Mortise Shutter: (L. & P., O. S., Dixie, &c.)

No.	1	1½	2	2½
Doz. pair	$0.60	.55	.52	.45

Mortise Reversible Shutter, (Buffalo, &c.)

No.	1	1½	2
Doz. pair	$0.65	.60	.55

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50 ..... 10%
Parker ..... 70@75%
Reading's Gravity ..... 75&10%
Sargent's, Nos. 1, 3, 5, 11 & 18 ..... 70&10@70&20%
Stanley's Steel Gravity Blind Hinges, ₩ doz. sets, without screws, $0.30; with screws, $1.15.
Wrightsville H'dware Co.:
O. S., Lull & Porter ..... 80&2½%
Acme, Lull & Porter ..... 75&10%
Queen City Reversible ..... 75&10%
Stenger's Positive Locking, Nos. 1 & 3 ..... 70&10&5%
Shepard's Noiseless, Nos. 60, 65, 55 ..... 70&10%
Niagara, Gravity Locking, Nos. 1, 3 & 5 ..... 75&7½%
1888, Old Pat'n, Nos. 1, 3 & 5 ..... 75&7½%
Tip Pat'n, Nos. 1, 3 & 5 ..... 75&7½%
Buffalo Gravity Locking, Nos. 1, 3 & 5 ..... 75&7½%
Shepard's Double Locking, Nos. 20 & 25 ..... 70&10%
Champion Gravity Locking, No. 75 ..... 75&7½%
Steamboat Gravity Locking, No. 10 ..... 5&7½%
Pioneer, Nos. 060, 45 & 5½ ..... 75&7½%
Empire, Nos. 101 & 103 ..... 70&7½%
W. H. Co.'s Mortise Gravity Locking, No. 3 ..... 80&10%

Gate Hinges—
Clark's or Shepard's—Doz. sets:

No.	1	2	3
Hinges with Latches	$1.50	2.50	3.25
Hinges only	$1.30	1.90	2.90
Latches only	.65	.85	.95

New England:
With Latch ..... doz. ..... @$1.55
Without Latch ..... doz. ..... @$1.25
Reversible Self-Closing:
With Latch ..... doz. ..... @$1.80
Without Latch ..... doz. ..... @$1.45
Western:
With Latch ..... doz. $1.40@1.75
Without Latch ..... doz. $0.95@1.20
Wrightsville H'dware Co.:
Shepard's or Clark's, Nos. 1 & 2 ..... 65&2½%
Shepard's or Clark's, No. 3 ..... 55&5%

Spring Hinges—
Holdback, Cast Iron, gro. $7.00@7.25
Non-Holdback, Cast Iron, gro. $6.50@6.75
J. Bardsley
Bardsley's Patent Checking 15%
Bommer Bros.:
Bommer Ball Bearing Floor Hinges 40%
Bommer Spring Hinges 40%
Chicago Spring Butt Co.:
Chicago 25%
Floor Hinge 50%
Garden City Engine House 25%
Keene's Saloon Door 25%
Triple End 50%
Hoffman Hinge & Foundry Co.:
No. 70 & 80 Holdback Detachable $8.50
Lawson Mfg. Co.:
Matchless 35%
Matchless Pivot 45%
Payson Mfg. Co.:
Oblique ..... 50&10%
Stover Mfg. Co.:
Ideal, No. 16, Detachable, ₩ gr. $12.50
Ideal, No. 4 ..... ₩ gr. $9.00
New Idea, No. 1 ..... ₩ gr. $9.00
New Idea, Double Acting 45%
Columbian Hdw. Co.:
Acme, Wrt. Steel 30%
Acme, Brass 20%
American 30%
Columbia, No. 14 ..... ₩ gr. $9.00
Columbia, No. 18 ..... ₩ gr. $25.00
Columbia, Adjustable 30%
Gem, new list 25%
Clover Leaf ..... ₩ gr. $12.50
Oxford, new list 25%

Extra 5@10% often given.

Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—
Strap and T Hinges, &c., list Mar. 15, 1901:
Light Strap Hinges 75%
Heavy Strap Hinges 80%
Light T Hinges 70%
Heavy T Hinges 66⅔%
Extra Heavy T Hinges ..... 75&10% } Extra 20@25%
Hinge Hasps 60%
Cor. Heavy Strap 80%
Cor. Ex. Heavy T ..... 75&10%
Screw Hook and Strap: 6 to 12 in ..... lb. 3 c / 14 to 20 in ..... lb. 2¾c / 22 to 36 in ..... lb. 2½c
Screw Hook and Eye:
⅝ to 1 inch ..... lb. 5 c
½-inch ..... lb. 6 c
⅜-inch ..... lb. 7 c

Miscellaneous—
Hoffman's Steel Spring Butt Hinges ..... 40&10%
Hoffman's Offset Refrigerator Hinges ..... 40&10%

Hods, Coal—

	15 inch.	16 inch.	17 inch.	18 inch.	
Galv. Open	$1.10	2.55	2.80	3.15	₩ doz.
Jap. Open	$1.60	1.92	2.10	2.40	₩ doz.
Galv. Funnel	$2.85	3.05	3.32	3.65	₩ doz.
Jap. Funnel	$2.10	2.45	2.65	2.90	₩ doz.

Hoes—Eye—
Scovil and Oval Pattern ..... 60&5@60&10&5%
Grub, list Feb. 22, 1899 ..... 70&5@70&10%
D. & H. Scovil 35%

Handled—
Sept. 1, 1900, List:
Field and Garden ..... 75&2½%
Ladies', Boys', Toy and Onion ..... 70&10&10%
Street and Mortar ..... 75&7½&2½%
Cotton ..... 70&10&10&5&2½%
Planters' ..... 70&30%
Weeding 75%
Note.—Manufacturers and jobbers use a diversity of lists, and often sell at net prices.
Ft. Madison Crucible Garden Hoe ..... 75&2½%
Ft. Madison Crescent Cultivator Hoe, per doz. ..... 75&10&2½%
Ft. Madison Mattock Hoes:
Regular Weight ..... ₩ doz. $4.50
Junior Size ..... ₩ doz. $4.00
Ft. Madison Sprouting Hoe, ₩ doz. $4.80
Ft. Madison Dixie Tobacco Hoe ..... 75&20%
Kretsinger's Cut Easy, per doz ..... 75&2½%
Warren Hoe 60%
W. & C. Ivanhoe ..... 75&2%
B. B. Cultivator Hoe ..... 75&10&2%
Acme Weeding ..... 75&10&2%
W. & C. Lightning Shuffle Hoe, ₩ doz. $4.85

Hog Rings and Ringers—
See *Rings and Ringers.*

Hoisting Apparatus—
See *Machines, Hoisting.*

Hollow Ware—
See *Ware, Hollow.*

Holders—Bit—
Angular, ₩ doz. $24.00 ..... 45&10%

Door—
Empire 30%

File and Tool—
C. E. Jennings & Co. Model Tool Holders ..... 33⅓&5%
Nicholson File Holders and File Handles ..... 33⅓&5%

Hooks—Cast Iron—
Bird Cage, Reading } Bird Cage, Sargent's List } 50&10@60%
Ceiling, Sargent's List ..... 40&10%
Clothes Line, Hoffman's ..... 40&10%
Clothes Line, Sargent's List ..... 50&10&5&10%
Clothes Line, Stowell's 70%
Clothes Line, Reading List ..... 65&10@65&10&10%
Coat and Hat, Stowell's 70%
Coat and Hat, Reading ..... 70@75%
Coat and Hat, Sargent's List ..... 45&10%
Coat and Hat, Wrightsville ..... 65&10%
Harness, Reading List ..... 70&10@75%

Wire—
Belt 30%
Wire C. & H. Hooks ..... 60&10@60&10&5%
Atlas, Coat and Hat:
Single Cases 40%
10 Case Lots ..... 45&10%
Czar Harness ..... 50&10&5%
Wire Coat and Hat:
Acme 60%
B. B. 60%
V Brace, Chief and Czar 60%
Gem 60%
Bright Wire Goods—See *Wire.*

Wrought Iron—
Box, 6 in., per doz. $1.50; 8 in., $1.75; 10 in., $2.00.
Cotton ..... doz. $1.05@1.35
Wrought Staples, Hooks, &c.—See *Wrought Goods.*

Miscellaneous—
Bush, Light, doz. $5.50; Medium, $6.00; Heavy, $6.50
Grass ..... *Nos.* 1 2 3 4
Best $1.50 1.75 2.00
Common $1.30 1.50 1.80 1.90
Potato and Manure 70%
Whiffletree ..... lb. 4½c
Hooks and Eyes:
Brass ..... 60&10&10@70%
Malleable Iron ..... 70&5@70&10%
Covert Saddlery Works' Self Locking Gate and Door Hook 60%
Crown Picture ..... 50&10%
Bench Hooks—See *Bench Stops.*
Corn Hooks—*See Knives, Corn.*

Horse Nails—See *Nails, Horse*

Horseshoes—
See *Shoes, Horse.*

Hose Rubber—
Garden Hose, ¾-inch:
Competition ..... ft. 4½@4½c
3-ply Standard ..... ft. 5 @ 5 c
4-ply Standard ..... ft. 8 @ 8 c
3-ply extra ..... ft. 9 @10 c
4-ply extra ..... ft. 11 @11 c
Cotton Garden, ¾-in., coupled:
Low Grade ..... ft. 6 @7 c
Fair quality ..... ft. 8 @9 c

Irons—Sad—
From 4 to 10 ..... lb. 5@5½c
B. B. Sad Irons ..... lb. 5½@6c
Chinese Laundry ..... lb. 5@5½c
Chinese Sad ..... lb. 5½@5½c
Mrs. Potts', per set:

Nos.	50	55	60	65
	67@72c	68@69c	77@82c	74@79c

New England Pressing ..... lb. 5½@5½c

Soldering—
Soldering Coppers, 1 & 1¼ lb., $1 @ 25c.; 2 lb., 19 @ 21c
Covert Mfg. Co ..... 20&2%
Smith & Hemenway Co's Sets 70%

Pinking—
Pinking Irons ..... doz. 50@60c

Jack Screws—See *Screws.*

Jacks, Wagon—
Covert Mfg. Co., Steel ..... 45&2%
Covert's Saddlery Works':
Daisy ..... 60&10%
Victor ..... 60&10%
Lockport ..... 40@40&10%
Lane's Steel ..... 33⅓&5%

Kettles—
Brass, Spun, Plain ..... 30@35%
Enameled and Cast Iron—See *Ware, Hollow.*

Knife Sharpeners—
See *Sharpeners, Knife.*

Knives—
Butcher, Shoe, &c.—
Foster Bros.' Butcher, &c 70%
Smith & Hemenway Co ..... 44&10%
Hay and Straw—See *Hay Knives.*

Corn—
Ft. Madison Cut-Easy, ₩ doz. $2.80
Withington Acme, ₩ doz., $2.65; Bent, $2.75; Adj. Serrated, $2.30; Serrated, $2.10; Yankee No. 1, $1.55; Yankee No. 2, $1.15.

Drawing—
Standard List ..... 70&5@70&10%
Adjustable Handle 50%
Bradley's 50%
Cantelo's Folding ..... 50&10%
C. E. Jennings & Co. Nos. 45, 48 ..... 40&10%
Jennings & Grimm 50%
Swan's ..... 70&10&10%
Watrous 40%
L. & L. J. White ..... 35&5&2½%

Hay and Straw—
Lightning Pat'n ... per doz. $3.85@4.00
Iwan's Sickle Edge ..... ₩ doz. $1.60
Iwan's Serrated ..... ₩ doz. $1.40
Lightning, (Genuine) $1.30
Maine ..... ₩ doz. $3.50

Mincing—
Buffalo ..... ₩ gro. $15.00

Miscellaneous—
Farriers' ..... doz. $3.00@3.60
Wostenholm's ..... ₩ doz. $3.00@3.50

Knobs—
Base, 2¼-inch, Birch, or Maple, Rubber tip, gro ..... $2.20@2.35
Carriage, Jap, all sizes ..... gro. 30@35c
Door, Mineral ..... doz. 60@65c
Door, Por. Jap'd ..... doz. 65@70c
Door, Por. Nickel ..... doz. $2.00@2.10
Bardsley's Wood Door, Shutter, &c 75%
Picture, Sargent's ..... 50&10%

Ladders, Step—
Handy Ladder Works:

Length. Feet.	Extended Length. Feet.	Ready for Use. Per doz.	Shipped Knocked Down. Per doz.
4	7	$16.00	$14.40
5	9	19.50	17.55
6	11	24.50	22.05
7	13	29.50	26.55
8	15	34.00	30.60
9	17	39.00	35.10
10	19	43.00	38.70
11	21	46.50	41.85
12	23	51.00	45.90

Ladies' Melting

L. & G. Mfg. Co. 25%
P., S. & W. ..... 40@40&10%
Reading ..... 50&10%
Sargent's ..... 40@40&10%

Lanterns—Tubular

Regular Tubular ..... doz. $4.35@4.75
Side Lift Tubular ..... doz. $4.75@5.25
Square Lift Tubular ..... doz. $4.75@5.25
Other Styles ..... 40@10@40@10@5%

Bull's Eye Police

No. 1, 2¼ inch $3.60
No. 2, 3 inch $4.00

Latches, Thumb

Roggin's Latches ..... doz. 32@53c

Lawn Mowers

See *Mowers, Lawn.*

Leaders Cattle

Small ..... doz. 50c; *large*, 55c
Covert Mfg. Co. ..... 45&2%

Lemon Squeezers

See *Squeezers, Lemon.*

Lifters, Transom

Solid Grip, Payson Mfg. Co. 80%
R. & E. 45%

Lines

Wire Clothes, Nos...	*18*	*19*	*20*
100 feet	$2.20	2.00	1.65
75 feet	$1.80	1.70	1.30

Ossawan Mills, Crown Solid Braided Chalk 33⅓%
Mason's, No. 0 to No. 5 ..... 33⅓%
Samson Cordage Works: Solid Braided Chalk, No. 0 to 3 ..... 40%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₱ gr. 30%

Locks—Cabinet

Cabinet Locks ..... 33⅓@33⅓&7½%

Door Locks, Latches, &c.

[Net prices are very often made on these goods.]

Reading Hardware Co. 40%
R. & E. Mfg. Co. 50%
Sargent & Co. ..... 40@40&10%

Elevator

Stowell's 33⅓%

Padlocks

Wrought Iron ..... 75&10@80%
R. & E. Mfg. Co. Wrt. Steel and Brass 50%

Sash, &c.

Fitch's:
Bronze and Brass 66⅔%
Iron 70%
Lyes' Patent,:
Bronze and Brass 62½%
Iron 65%
Wrought Bronze and Brass ..... 55&5%
Wrought Steel 60%
Payson's Signal 80%
Reading ..... 60&10&10@70%

Machines—Boring

Without Augers.

	Upright.	Angular.
Improved No. 3	$4.25	No. 1 $5.00
Improved No. 4	3.75	No. 2 3.38
Improved No. 5	2.75	
Jennings'	2.50	3.00
Millers' Falls		5.75
Snell's, Rice's Pat.	2.50	2.75
Swan's, No. 500	5.10	No. 200 6.45

Hoisting

Moore's Anti-Friction Differential Pulley Block 30%
Moore's Hand Hoist, with Lock Brake. 20%
Moore's Portable Pneumatic Hoist 25%

Ice Cutting

Chandler's 15%

Washing

Wayne American ..... ₱ doz. $28.00
Western Star, No. 2 ..... ₱ doz. 28.00
Western Star, No. 3 ..... ₱ doz 30.00
St. Louis, No. 41 ..... ₱ doz. 60.00

Mallets

Hickory ..... 45&5@50%
Lignumvitæ ..... 45&5@50%
Tinners', Hickory and Applewood, doz ..... 50@55c

Mats

Door

Elastic Steel (W. G. Co.) 10%

Mattocks

See *Picks and Mattocks.*

Meat Cutters

See *Cutters, Meat.*

Milk Cans—See *Cans, Milk*

Mills—Coffee

Enterprise Mfg. Co. ..... 25@30%
National, list Jan. 1, '94 ..... 30%
Parker's Columbia and Victor@ ..... 50&10@60%
Parker's Box and Side ..... 50&10@60%
Swift, Lane Bros. 30%

Mincing Knives

See *Knives, Mincing.*

Molasses Gates

See *Gates, Molasses.*

Money Drawers

See *Drawers, Money.*

Mowers, Lawn

Net prices are generally quoted.
Cheap ..... *all sizes. $1.80@2.10*
Good ..... *all sizes, $2.50@2.75*

	10	12	14	*16-inch*
High Grade	4.25	4.50	4.75	5.00

Continental ..... 60&10&5%
Great American ..... 70&5%
Great American Ball Bearing ..... 60&10&5%
Quaker City ..... 70&5%
Pennsylvania ..... 60&10&5%
Pennsylvania Golf 50%
Pennsylvania Horse 40%
Pennsylvania Pony 45%
Philadelphia:
Styles M., S., C., K., T. ..... 70&5%
Style A, all Steel ..... 60&10%
Style E, Low Wheel ..... 60&10%
Style E, High Wheel ..... 70&10&5%
Drexel and Gold Coin, low list ..... 50&5%

Nails

Cut and Wire. See Trade Report.
Wire Nails and Brads, Papered.
List July 20, 1899 ..... 85&10%
Hungarian, Finishing, Upholsterers', &c. See Tacks.

Horse

Nos.	6	7	8	9	10	
A. C.	25¢	23¢	22¢	21¢	21¢	40&5%
Ausable	22¢	24¢	25¢	24¢	23¢	50&10%
Capewell	19¢	18¢	17¢	16¢	16¢	10&5%
C. B. K.	25¢	25¢	22¢	21¢	21¢	40%
Champ'n	28¢	26¢	25¢	24¢	23¢	40&10&5%
Clinto	19¢	17¢	16¢	15¢	14¢	30&10&5%
Maud S.	25¢	23¢	22¢	21¢	21¢	50%
Neponset	23¢	21¢	20¢	19¢	18¢	40%
Putnam	23¢	21¢	20¢	19¢	18¢	33⅓%
Vulcan	23¢	21¢	20¢	19¢	18¢	25&10%

American, Nos. 5 to 10 ₱ ℔ ..... 9@9½¢
Jobbers' special brands...per lb. 8@9c

Picture

	1½	2	2½	3	3½ *in.*
Brass Head	.55	.60	.70	.95	1.00 *gro.*
Por. Head	...	1.10	1.10	1.10	... *gro.*

Nippers, See *Pliers and Nippers.*

Nut Crackers

See *Crackers, Nut.*

Nuts

Cold Punched ..... *Off*
Mfrs. or U. S. Standard. *list.*
Hexagon, plain 5.80c
Square, plain 5.40c
Square, C. T. & R. 5.60c
Hexagon, C. T. & R. 6.30c
Hot Pressed:
Mfrs., U. S. or Nar. Gauge Stan'd.
Square Blank or Tapped 5 60c
Hexagon Blank or Tap'd 6.30c

Oakum

Best or Government ..... *lb.* 6¼c
Navy ..... *lb.* 5 c
U. S. Navy ..... *lb.* 5½c
Plumbers' Spun Oakum 2¾c
In carload lots ¼c lb. off f. o. b. New York.

Oil, Axle

Snow Flake:
1 pt. cans, per doz $3.00
1 qt. cans, per doz $4.80
1 gal. cans, per doz $15 00
5 gal. cans, per doz $66.00
} 33⅓&10%

Oil Tanks—See *Tanks, Oil.*

Oilers

Brass and Copper ..... 40&10@50%
Tin or Steel ..... 60¢10@65%
Zinc ..... 60¢10@65%
Paragon:
Brass and Copper ..... 40¢10%
Tin or Steel ..... 60¢10%
Zinc ..... 60¢10%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4; No. 3, $4.40 ₱ doz. 20%
Malleable, Hammers' Old Pattern, same list ..... 50&10%
Wilmot & Hobbs Mfg. Co:
Spring Bottom Cans ..... 70&70&10%
Railroad Oilers etc, ... 60&60&10%

Openers

Can

French ..... *doz. 35c*
Iron Handle ..... *doz. 25@27c*
Sprague, Iron Hdle., per doz. 35@40c
Sardine Scissors...doz. $1.75@$3.00
Tip Top ..... per doz. $0.75
National, ₱ gro ..... $1.75@$2.00
Stowell's ..... per doz. 40@45c
Waldorf, ₱ gro. $8.65

Egg

Nickel Plate ..... per doz., $2.25
Silver Plate ..... per doz., $3.50

Packing

Asbestos Packing, Wick and Rope, 18c lb.

Rubber

Sheet, C. I. ..... 8@12%
Sheet, C. O. S. ..... 9@15%
Sheet, C. B. S. ..... 10@14%
Sheet, Pure Gum ..... 50@70%
Sheet, Red ..... 35@40%
Jenkins' Standard, ₱ ℔ 80¢ ... 25@25&5%

Miscellaneous

American Packing ..... 9@10c lb.
Cotton Packing ..... 13@14c lb.
Italian Packing ..... 10½@11¢c lb.
Jute ..... 3½@5c lb.
Russia Packing ..... 12@13c lb.

Pails

Creamery

E. S. & Co., with gauges.. No 1 $6.50; No. 2, $5.75 ₱ doz.

Galvanized

Price per gro.

Quart	*10*	*12*	*14*
Water, Regular	18.00	21.00	24.00
Water, Heavy	24.00	27.30	30.00
Fire, Rd. Bottom	31.00	33.00	35.00
Well	27.00	29.00	31.00

Pans—Dripping

Standard List... ..... 50&5@60&10&5%

Fry

Common Lipped:

No.	*1*	*2*	*3*	*4*	*5*
Per doz.	$0.60	.75	.85	.95	1.15

Roasting and Baking

Regal, S. S. & Co., ₱ doz., Nos. 5, $4.50; 10 $5.00; 20 $5.50; 30, $6.00
Simplex, ₱ gro., No. 40 $30.00; 50, $34.50; 60 $39 00; 140, $33.00; 150, $37 50; 160, $43.00.

Paper

Building Paper

Asbestos: *lb.*
Building Felt 3c
Mill Board, sheet, 40 x 40 inches...4c
Mill Board, roll, thicker than 1-16 inch c
Mill Board, roll, 1-16 in. thick and less 3c

	Per roll
Rosin Sized Sheathing: 500 sq. ft.	
Light wt., 20 lbs. to roll	$0.32
Medium wt., 30 lbs. to roll	$0.47
Heavy wt., 40 lbs. to roll	$0.58
Medium Grades Water Proof Sheathing	$0.65@1.25
Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton	$36.00@37.00
Red Rope Roofing, 500 sq. feet per roll	$1.65

Tarred Paper.

1 ply (roll 200 sq. ft.), ton...$26.00@27.00
2 ply, roll 108 sq. ft. 50c
3 ply, roll 108 sq. ft 70c
Slater's Felt (roll 500 sq. ft.)...50@60c
R. R. M. Stone Surfaced Roofing (roll 110 sq. ft.) $2.75

Sand and Emery

List Dec. 23, 1899...50¢10@50¢10¢10%

Parers—Apple

Advance ..... ₱ doz. $4.50
Baldwin ..... ₱ doz. $5.00
Bonanza ..... each $5.00
Dandy ..... each $7.50
Eureka, 1898 ..... each $16.00
Family Bay State ..... ₱ doz. $12.00
Hudson's Little Star ..... ₱ doz. $4.00
Hudson's Rocking Table ..... ₱ doz $5.50
Improved Bay State ₱ doz. $27.00@30.00
New Lightning ..... ₱ doz. $5.50
Reading 72 ..... ₱ doz. $4.00
Reading 78 ..... ₱ doz. $7.00
Turn Table '98 ..... ₱ doz. $5.50
White Mountain ..... ₱ doz. $4.00

Potato

Saratoga ..... ₱ doz. $5.50
White Mountain ..... ₱ doz. $4.50

Paris Green

per lb.
In Arsenic kegs or casks 12½c
In kegs, 100 to 175 lbs ..... 13 c
In kits, 14, 28, 56 lbs ..... 14 c
In paper boxes, 2 to 5 lbs ..... 14 c
In paper boxes, 1 lb 14½c
In paper boxes, ½ lb 15½c
In paper boxes, ¼ lb 16½c

Picks and Mattocks

List Feb. 23, 1899....70¢10@70¢10¢5%

Pinking Irons

See *Irons, Pinking.*

Pins—Escutcheon

Brass 60%
Iron, list Nov. 11, '85.. ..... 60%

Pipe, Cast Iron Soil

Factory Shipments—Carload lots.
Standard, 2-6 in. ..... 65¢5%
Extra Heavy, 2-6 in. ..... 70&10%
Fittings ..... 75¢10&5%
NOTE.—*Freight allowed on Carload lots.*

Pipe, Merchant, Boiler Tubes, &c.

Less than Carloads to Consumers. Merchant Pipe.

	Black.	*Galvanized.*
⅛ to ½ inch	61%	48%
¾ to 10 inch	68½%	56%

Boiler Tubes

Steel.	*Up to 22 feet.*
1 to 1¼ inch and 2¾ to 5 inch inclusive	65½%
2 to 2½ inch, inclusive	60%
6 to 10 inches	59%
Iron.	
1 to 1½ inch and 2½ in.	43½%
1¾ to 2¼ inch	43%
2¾ to 15 inch	53%
Casing, Cut Lengths.	*S. & S.*
2 to 3 inch	53½%
3¼ to 4½ inch	59%
4¾ to 12½ inch	61½%

NOTE.—*Prices to jobbers are from 5@10% less than above.*

Pipe, Sewer

Delivered at Eastern Points.
Standard Pipe, 2 to 24 inch...70@73%
Fittings, 2 to 24 inch ..... 70@73%

Planes and Plane Irons—Wood Planes

Molding ..... 40¢2½@40¢10%
Bench, First quality ..... 45¢10@45¢10¢5%
Bench, Second quality ..... 50¢10@50¢10¢5%
Bailey's (Stanley R. & L. Co) ..... 50&10@50&10&10%
Gage Self Setting 35%

Iron Planes

Bailey's (Stanley R. & L. Co) ..... 50&10@50&10&10%
Chaplin's Iron Planes ..... 50&10%
Miscellaneous Planes (Stanley R. & L. Co.) ..... 25&10@25&10&10%
Sargent's ..... 50&10&10%

Plane Irons

Wood Bench Plane Irons ..... 30¢5@30¢10¢5%
Buck Bros. 30%
Butcher's ..... $5.00@5.25 to £
Stanley R. & L. Co... 50&10@50&10&10%
L. & I. J. White ..... 20&5@25%

Planters, Corn, Hand.

Kohler's Eclipse ..... ₱ doz. $0.00

Plates

Felloe ..... *lb.* 3¾@4c
Self-Sealing Pie Plates (S. S. & Co.), ₱ doz. $2.00 ..... 50%

Pliers and Nippers

Button Pliers ..... 70¢10@75¢
Gas Burner, per doz., 5 in., $1.15@ $1.20; 6 in., $1.35@$1.45
Gas Pipe.. 7 8 10 12-in.
$1.75 $2.00 $2.25 $3.75
Acme Nippers ..... 50@50&5%
Bernard's:
Parallel Pliers, &c. 25%
Paragon Pliers ..... 50&5%
Lodi Pliers ..... 50&5%
Elm City Fence Pliers 35%
Cronk Hanger Co.:
American Button ..... 75&10%
Cronk's 60%
Improved Button ..... 70&10%
Stub's Pattern 50%
Combination and others 25%
Heller's Farriers' Nippers, Pincers, and Tools 50@50&5%
P., S. & W. Tinners' Cutting Nippers, 30@30&10%
Swedish Side, End and Diagonal Cutting Pliers 50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds 40%

Plumbs and Levels

Plumbs and Levels ..... 75@75&10%
Davis Iron, Machinist Nos. 1 to 14 ..... 20%
Davis Iron, Adjustable Nos. 6 to 40 ..... 35%
Disston's 70%
Pocket Levels ..... 75&10&10@75&10%
Stanley R. & L. Co ..... 70&10@70&10&10%
Stanley's Duplex ..... 25&10@25&10&10%
Woods' Extension 33⅓%

Poachers, Egg

Buffalo Steam Egg Poachers, ₱ doz., No. 1, $7.20; No. 2, $11.00 No. 3, $11.00; No. 4, $14.50 ..... 50%

Points, Claziers'

Bulk and 1 lb. papers.. lb. 8 @ 8¼c
½-lb. papers ..... *lb.* 8¼@ 8¾c
¼-lb. papers ..... *lb.* 8½@ 8¾c

Pokes, Animal

Ft. Madison Hawkeye ..... ₱ doz. $3.25
Ft. Madison, Western ..... ₱ doz. $3.75

Police Goods

Manufacturers' Lists ..... 25@25&5%
Tower's 25%

Polish—Metal

Prestoline Liquid, No. 1 (⅛ pt.), ₱ doz. $3.00; No. 2 (1 qt.), $9.72 ..... 40%
Prestoline Paste ..... 40&10%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ₱ doz. 50¢; ₱ gr. $4.50; ½ ℔ boxes, ₱ doz. $1.25; 1 ℔ boxes, ₱ doz. $2.25.
U. S. Liquid, 8 oz. cans, ₱ doz. $1.25; ₱ gr. $12.00.
Barkeepers' Friend Metal Polish, ₱ doz. $1.75; ₱ gr. $18.00.
Wynn's White Silk, ½ pt. cans, ₱ doz. $2.00

Stove

Black Eagle Benzine Paste, 5 ℔ cans .. ₱ ℔ 10¢
Black Eagle, Liquid, ½ pt. cans. ..... ₱ doz. 75¢
Black Jack Paste, ¾ ℔ cans, ₱ gro. $9.00
Ladd's Black Beauty, gr. $10.00 ..... 50%
Joseph Dixon's, ₱ gr. $5.75 ..... 10%
Dixon's Plumbago ..... ₱ ℔ 8¢
Fireside ..... ₱ gr. $2.50
Gem, ₱ gr. $4.50 ..... 10%
Japanese ..... ₱ gr. $3.50
Jet Black ..... ₱ gr. $3.50
Peerless Iron Enamel, ½ pt. cans. ..... ₱ doz. $1.50
Wynn's:
Black Silk, 5 ℔ pail ..... each 70¢
Black Silk, ½ ℔ box ..... ₱ doz. $1.00
Black Silk, 5 oz. box ..... ₱ doz. $0.75
Black Silk, ½ pt. liq ..... ₱ doz. $1.00

Poppers, Corn

Round or Square:
1 qt ..... *gro. $6.50@$7.00*
1½ qt ..... *gro. 9 50@ 10.00*
2 qt ..... *gro. 10.50@ 11.00*

Post Hole and Tree Augers and Diggers

See also *Diggers, Post Hole, &c.*

Potato Parers

See *Parers, Potato.*

Pots—Glue

Enameled 45%
Tinned 40%

Powder

In Canisters:
Duck, ½ lb. each 45c
Fine Sporting, 1 lb. each 75c
Rifle, ½-lb. each. 15c
Rifle, 1-lb. each.. ..... 25c
In Kegs:
Duck, 6¼-lb. kegs $2.25
Duck, 12½-lb. kegs $4.25
Duck, 25-lb kegs $8.00
Rifle, 6¼-lb kegs $1.25
Rifle, 12½-lb. kegs $2.25
Rifle, 25-lb. kegs $4.00
King's Semi-Smokeless:
Keg (25 ℔ bulk) $8 50
Half Keg (12½ ℔ bulk) $3.50
Quarter Keg (6¼ ℔ bulk) $1.90
Case 24 (1 ℔ cans bulk) $8.50
Half case (1 ℔ cans bulk) $4.50

King's Smokeless:	Shot Gun	Rifle
Keg (25 ℔ bulk)	$12 00	$15.00
Half Keg (12½ ℔ bulk)	6.25	7.75
Quarter Keg (6¼ ℔ bulk)	3.25	4.00
Case 24 (1 ℔ cans bulk)	14.00	17 00
Half case 12 (1 ℔ cans bulk)	7.25	8 75

Presses

Fruit and Jelly

Enterprise Mfg. Co. ..... 20@25%

Pruning Hooks and Shears—See *Shears.*

Pullers, Nail

Cyclops ..... 40@40&10%
Diamond B, No. 2, case lots ₱ doz. $6 00
Diamond B, No. 3, case lots. ₱ doz. $5.50
Giant, No. 1, ₱ doz. $18; No. 2, $15.50; No. 3, $15 ..... 40%
Miller's Falls, No. 3, per doz. $12.00. ..... 15&10%
Pelican ₱ doz. $9.00 ..... 40&10%
Scranton, Case Lots:
No. 1 (large), ₱ doz. $6.50; No. 2 (large), $5.75; No 3 (small), $5.00; No. 2-B (large), $5.50; No. 3-B (small), $5.00; No. 2-D (large), $4.50; No. 3-D (small) $4 00.

Pulleys

Hay Fork, Swivel or Solid Eye ..... *doz. $1.35@1.50*
Hot House, Awning, &c. ..... 60@60&10%
Japanned Clothes Line ..... 60@60&10%
Japanned Screw ..... 70&10&10%
Japanned Side ..... 70&10&10%
Stowell's:
Ceiling or End, Anti-Friction 60%
Dumb Waiter, Anti-Friction ..... 60&10%
Hay Fork, Anti-Fricton, 5-in. Wheel, ₱ doz. $12.00. ..... 40%
Electric Light 60%
Side, Anti-Friction ..... 60&10%

Sash Pulleys

Common Frame; Square or Round End per doz., 1¾ in., 14c.; 2 in., 17c
Auger Mortise, no Face Plate, per doz. 1¾ in., 15c.; 2 in., 18c.
Auger Mortise, with Face Plate, per doz., 1¾ in., 16c.; 2 in., 19c.

Acme.....1¼ in., 16¢; 2 in., 19¢
Common Sense, 1¼ in.... ₱ doz., 18¢; 2 in., 20¢.
Fox-All-Steel, Nos. 3 and 7, 2¼ in.....
₱ doz. 25¢
No. 9, 1¾ in.....
Extra for Plated Finish.....₱ doz. 20¢
Extra for Anti-Friction Bronze Bushing.....₱ doz 10¢
Grand Rapids All Steel Noiseless....40%
Ideal No. 13.....1¾ in.. ₱ doz., 16¢
Niagara.....1¾ in., 16¢; 2 in., 19¢
No. 20, Troy....1¾ in., 14½¢; 2 in., 16½¢
Star.....1¾ in., 16¢; 2 in., 19¢
Tackle Blocks—See *Blocks.*

Pumps—

Cistern.....60@ ...%
Pitcher Spout.....75@ ...%
Pump Leathers, Lower and Plunger Valves—Per gro.:

Inch..	2	2¼	2½	2¾
	$2.20	2.50	2.75	3.00
Inch..	3	3¼	3½	3¾	4
	$3.30	3.60	3.85	4.10	4.40

Barnes Dbl. Acting (low list).....50%
Flint & Walling's Fast Mail.....55&10%
Flint & Walling's Pitcher Spout....80&10%
Loud's Suction Pumps, U. S. Co.....20%
Myer's Pumps, low list 50%
Contractors' Rubber Diaphragm Non-chokable, B. & L. Block Co.....30%

Punches—

Revolving (4 tubes)...doz. $3.50@3.75
Saddlers' or Drive, good..doz. 65@70c
Spring, good quality.....$1.65@1.75
Bemis & Call Co.'s Cast Steel Drive.....50%
Bemis & Call Co.'s Check.....55%
Bemis & Call Co.'s Spring.....55%
Niagara Hollow Punches.....50%
Niagara Solid Punches.....45%
Steel Screw, B & K. Mfg. Co.....55%
Tinners' Hollow, P., S. & W. Co.....40%
Tinners' Solid, P., S. & W.Co., ₱ doz.. $1.44.....35@35&5%
.....60%

Rail—Barn Door, &c.—

Barn Door, Light.. ⅝ ¾ ⅞ *In.*
100 feet.....$2.00 $2.50 $3.00 $3.50
B. D., for N. E. Hangers:

	Small.	*Med.*	*Large.*
100 feet.....	$2.20	2.70	3.20

Sliding Door, Bronzed Wr't Iron, ft. 6½¢
*Sliding Door, Iron Painted....*2½@3¢
Sliding Door, Wrought Brass, 1¼ in..... lb. 36¢...30%
Cronk's Double Braced Steel Rail, ₱ foot.....3½¢
Cronk's O. N. T. Rail.....3½¢
Lanes' O. N. T., ₱ 100 ft., 1 inch...$2.75
Lanes' Standard, ₱ 100 ft.....3.75
Lawrence Bros.'.....₱ ft. 4½¢
McKinney's None Better.....₱ ft. 3½¢
McKinney's Standard.....₱ ft. 4 ¢
Stowell's Cast Rail.....
Stowell's Steel Rail, Plain.....1½¢
Stowell's Wrough' Bracket, Plain....3½¢

Rakes—

Net Prices, Malleable Rakes:

	10	12	14	16-tooth
Shank.....	$1.50	1.60	1.75	1.85
Socket...	1.65	1.90	1.95	2.10

Sept. 1, 1900, List:
Cast Steel.....70@5&2%
Malleable.....70@10@75&5%
Lawn Rakes, Metal Head, per doz.,
20 teeth.....$3.25@3.50
24 teeth.....$3.50@3.75
Fort Madison Red Head Lawn.....$3 25
Fort Madison Blue Head Lawn.....$3 00
Jackson Lawn, 29 and 30 teeth .....
₱ doz. $4.00
Kohler's:
Lawn Queen, 20-tooth, ₱ doz.....$1.60
Lawn Queen, 24-tooth, ₱ doz.....1.75
Paragon, 20-tooth, ₱ doz.....$2.85
Paragon, 24-to th, ₱ doz.....3.00
Steel Garden, 14-tooth, ₱ doz.....$3.00
Malleable Garden, 14-tooth.....
₱ doz. $2.25

Rasps, Horse—

Disston's.....75%
Heller Bros.....60&10&10%
McCaffrey File Co. Horse Rasps.....
New Nicholson Horse Rasp.....60&10&5%
See also *Files.*

Razors—

Boracle.....
Fox Razors, No. 42.....₱ doz. $20.00 } 70%
Fox Razors, No 44.....₱ d z $24.00 } dis.
Fox Razors, No. 82, Platina, ₱ doz $24.00 } 40

Razor Strops—

See Strops, Razor.

Reels—Fishing—

Hendryx Aluminum, German Silver, Gold, Bronze, Silver, Rubber, Populo and Salmon, Single Action, Multiplying and Quadruple, all sizes.....25%
Hendryx Single Action Series, 102P and PN, 202P and PN, 102 PR and PRN, 202 PR and PRN, 304 P and P N, 003O4P and PN, 502 and 502N, 802 and 802N, 0208N, Competitor.50%
Hendryx Multiplying and Quadruple Series, 3004N and PN, 42 and PN, 2904N, 2904P and PN, 002902 PN, 0924 and 0924N, 5009N and PN.....40&10%
Shakespeare, Style C.....25%

Registers—

Leading Sizes.
Black Jap.....60@10@...%
White Jap.....40@10@50%
Bronzed.....40@10@50%
Nickel Plated.....40@10@50%
Electro Plated.....50@10@50%
There is a good deal of irregularity in prices of Registers, and some very low quotations are current on Black Japanned.

Revolvers—

Single Action.....80@85c
Double Action.....
Automatic.....$1.35
Non-merless.....$2.75

Riddles, Grain or Sand—

Grain, per doz.....$2.00@$2.25
Sand, per doz.....$2.25@$2.50
Coal, per doz.....$2.50@$2 75

Rings and Ringers—

Bull Rings—

Steel.....	*2* $0 80	*2½* 0.90	*3 Inch.* 0.95 *doz.*
Copper.....	1.10	1.30	1.50 *doz.*

Hog Rings and Ringers—

Hill's Rings....gro. boxes, $4.50@4.75
Hill's Ringers, Gray Iron doz. 55@60c
Hill's Ringers, Mal. Iron, per doz 75@80c
Blair's Rings.....per gro. $5.75@6.00
Blair's Ringers...per doz. $0.65@ .70
Brown's Rings....per gro. $6.00@6.25
Brown's Ringers..per doz. $1.00@1.10
Rapid Rings.....₱ gro. $6.00
Rapid Ringers.....₱ doz. $3.50

Rivets and Burrs—

Copper.....50@50&5%
Iron or Steel:
Tinners'.....70@70&10%
Miscellaneous.....70@70&10%

Rivet Sets—See *Sets.*

Roasting and Baking Pans—See *Pans, Roasting and Baking.*

Rollers—

Acme, Stowell's Anti-Friction.....50%
Barn Door, Sargent's list.....50&10&10%
Cronk's Stay.....
Cronk's Brinkerhoff.....66⅔%
Lane's Stay.....66⅔%
Stowell's Barn Door Stay...₱ doz. $1.25

Rope—

Manila, 7-16 in. and larger. lb. 10 c
Manila.....⅜-inch lb. 10½c
Manila, ¼ and 5-16 inch lb. 11 c
Manila, Tarred Rope, 15 thread..... lb. 10 c
Manila Hay Rope, Med'm lb. 10 c
Sisal, 7-16 in. and larger lb. 7 c
Sisal.....⅜-inch lb. 7½c
Sisal.....¼ and 5-16 inch lb. 8 c
Sisal, Hay Rope, 2 to 10 ply..... lb. 7 c
Sisal, Tarred, Medium Lath Yarn..... lb. 6½c
Cotton Rope: lb. 6½c
Best...¼-in. and larger lb. 14 c
Midium, ¼-in. and larger lb. 11½c
Com., ¼-in. and larger lb. 9 c
Jute Rope, No. 1, ¼ in. and up..... lb. 6½c
Jute Rope, No. 2, ¼-in. and up..... lb. 6 c

½c less in 5 pound Lots.

Wire Rope—

Galvanized .....25&7½%
Plain.....30&7½%

Ropes, Hammock—

Covert Mfg. Co.....
Covert Saddlery Works.....60&5%

Rules—

Boxwood...75&10&10&10&10@75&10&10&10&10&5%
Ivory ...40&10&10@40&10&10&10&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber.....50&10%
Stanley R. & L. Co.;.....50&10%
Boxwood...75&10&10@75&10&10&10%
Ivory.....35&10@35&10&10%

Sad Irons—See *Irons, Sad.*

Sand and Emery Paper and Cloth—

See *Paper and Cloth.*

Sash Cords—See *Cord, Sash.*

Sash Locks—See *Locks, Sash.*

Sash Weights—

See *Weights, Sash.*

Sausage Stuffers or Fillers—See *Stuffers or Fillers Sausage.*

Saw Frames—

See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—

Atkins:
Circular.....50@50&10%
Band.....60%
Cross Cuts.....50&10 &60%
Mulay, Mill and Drag.....35&5%
One-Man Saw.....50&10%
Wood Saws.....40%
Hand, Compass, &c.....40%
Disston's:
Circular Solid and Inserted Tooth..50%
Band 2 to 14 in. wide.....60%
Band ¼ to 1¾.....70%
Crosscuts.....
Narrow Crosscuts.....45@45&10%
Mulay, Mill and Drag.....50@50&10%
Framed Woodsaws.....50%
Woodsaw Blades.....35@35&7½%
Woodsaw Rolls.....40@40&7½%
Hand Saws, Nos. 12, 99, 9, 16, 4100, D8, 120, 79, 77, 8.....25%
Hand Saws, Nos. 7 ,07, 1078, 3, 1, 0, 00, Combination.....25@25&7½%
Compass Keyhole, &c.....30@30&7½%
Butcher Saws and Blades..35@35&7½%
C. E. Jennings & Co.'s.:
Back Saws.....25%
Butcher Saws.....25%
Compass and Key Hole Saws.....35%
Framed Wood Saws.....25%
Hand Saws.....40%
Wood Saw Blades.....25@30%
Peace:
Circular and Mill 45%
Cross Cuts, list Jan. 1, '99.....50%
Hand, Panel and Rip.....50%
Richardson:
Circular and Mill 30%
Hand, &c.....50%
X Cuts, list Jan. 1, '99.....30%
Simonds':
Circular Saws.....50%
Crescent Ground Cross Cut Saws..35%
One-Man Cross Cuts.....40&10%
Gang Mill, Mulay and Drag Saws..50%
Hand Saws.....
Back Saws.....50%
Butcher Saws.....25@25&7½%
Hand Saws.....35@35&7½%
Compass, Keyhole, &c .....25@25&7½%
Wood Saws .....35@35&7½%

Hack Saws—

Disston:
Concave Blades.....25%
Keystone.....35%
Hack Saw Frames.....30%
C. E. Jennings & Co.'s:.....30%
Hack Saw Frames, Nos. 175, 180, 330.....40%
Hack Saws, Nos. 175, 180, 330, complete.....40%
Griffin's Hack Saw Frames 40%
Griffin's Hack Saw Blades.....45%
Star Hack Saws and Blades.....45%
.....15&10%

Scroll—

Barnes' No. 7, $15.....
Barnes' Scroll Saw Blades.....25%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18:.....40%
Barnes' Velocipede Power Scroll Saw, with boring attachment, $20.....
Lester, complete, $10.00.....20%
Rogers, complete, $4.00.....15&10%

Scale Beams—

See *Beams, Scale.*

Scales—

Family, Turnbull's.....30@30&10%
Counter:
Hatch, Platform, ½ oz to 150 lbs. doz $5.50
Two Platforms, ½ oz to 8 lbs. doz. $16.00
Union Platform, Plain..$1.70@1.90
Union Platform, Striped $1.85@2.15
Chatillon's:
Eureka.....25%
Favorite.....40%
Grocers' Trip Scales.....50%
Pelouze Scales—Household, Counter, Confectionery, Postal, Ice, &c.....70%
"The Standard" Portables.....45%
"The Standard" R. R. and Wagon.....30%

Scrapers—

Box, 1 Handle .....doz $2.27@2.50
Box, 2 Handle .....doz. $3.75@4.00
Ship, No 1, doz. $3.50; No 2, $2.25@2.50
Adjustable Box Scraper (S. R. & L. Co.) $6.00.....30&10%

Screens, Window and Frames—

Bonanza Window Screens.....60@60&5%
Flyer Pattern Window Screen.60@60&5%
Maine Window Screen Frames.40&10&5%
Perfection Window Screens.....60@60&5%
Phillips' Window Screen Frames.....60&10&5%
Porter's Hummer Window Screens.....60&10&5%
Porter's Klondike Window Screens .....60&10&5%
Wabash Spring Adj. Screen.....60&2½@60&7½%
See also *Doors.*.....50%

Screw Drivers—

See *Drivers, Screw.*

Screws—

Bench and Hand—

Bench, Iron..doz. 1 in., $3.00@3.25;
1¼, $3.50@3.75; 1¼, $4.00@4.50
Bench, Wood, Beech..doz. $3.50@2.75
Hand, Wood.....30@5@40%
Hand, I. Bliss Mfg Co.....35%

Coach, Lag and Hand Rail—

Lag, Common Point, list Oct. 1, '99.....75&15@...%
Coach and Lag, Gimlet Point, list Oct. 1, '99.....75@10@...%
Hand Rail, list Jan. 1, '81.60@10@...%

Jack Screws—

Standard List.......75@75&10%
Millers Falls.....50&10&10%
Millers Falls, Roller .....50&10%
P., S. & W.....50&10%
Sargent.....50@50&5%

Machine—

List Jan. 1, '98.
Flat or Round Head, Iron..50@50&5%
Flat or Round Head, Brass.....50@50&5%

Set and Cap—

Set (Iron or Steel) .....70&10%
Sq. Hd. Cap.....65&10%
Hex. Hd. Cap.....65&10%

Wood—

List Jan. 1, 1900.
Manufacturers' printed discounts:
Flat Head, Iron.....87½@90%
Round Head, Iron.....87½@90%
Flat Head, Brass .....85@87½%
Round Head, Brass.....85@87½%
Flat Head, Bronze.....82½@85%
Round Head, Bronze.....75@80%
Drive Screws.....72½@77½%
.....87½@90%

Scroll Saws—See *Saws, Scroll.*

Scythes—

Grass Scythes:
Natural Finish.....per doz. $7.25
Polished Blade.....per doz. $7.25
Painted or Bronzed..per doz. $7.75
Weed and Bush..per doz. $7.25@7.50

Scythe Snaths—

See Snaths, Scythe.

Seeders—Raisin—

Enterprise.....25@30%

Sets—Awl and Tool—

Brad Awl and Tool Sets:
Wood Hdle..10 Awls doz. $2.00@2.25
Wood Hdle., 14 Awls, 6 Tools... doz. $2.50@2.60
Aiken's Sets, Awl and Tools:
No. 20, ₱ doz. $10.00.....
Fray's Adj. Tool H dls.....50&10&10%
$18; 3, $12; 4, $9; 5, $7.....
Millers Falls Adj. Tool Hdls, No. 1, $12; No. 4, $12; No. 5, $18 .....50%
Stanley's Excelsior:
No. 1, $7.50; No. 2 $4.00; No. 3, $5.50.....15&10%

Garden Tool Sets—

Ft. Madison Rakes, Shovel and Hoe, ₱ doz.....30&10&30&10%

Nail—

Square.....30&10%
Round, Blk. and Pol., assorted.....per gro. $2 50
Octagon.....gro. $1.80@2.50
Knurled, Good.....gro. $4.25@4.75
Buck Brothers.....gro. $6.00@6.50
Cannon's Diamond Point, ₱ gr. $12..25%
Mayhew's.....27½%
Snell's Corrugated, Cup Pt. per gro. $9.00
Snell's Knurled, Cup Pt....per gro. $7.50

Rivet—

Regular list.....70@70&10&5%

Saw—

Aiken's:
Genuine.....
Imitation .....₱ doz. $5.50@6.00
Atkin's.:.....₱ doz. $3.00@3.10
Criterion.....
Adjustable.....40%
Bemis & Call Co's.:.....40%
Cross Cut.....
Hammer, new Pat.....30%
Plates.....45%
Spring Hammer.....20%
Disston's Star and Monarch.....30%
Morrill's No. 1, $15.00.....25%
Nos. 3 and 4, Cross Cut, $23.00.....40&20%
No. 5, Mill, $31.00.....50&20&5%
No. 10, $15.50.....50&10&10%
No. 11, $16.00.....40&20%
Taintor Positive, ₱ doz. $18.....60%

Sharpeners Knife—

Chicago Wheel & Mfg. Co.....63%
Smith & Hemenway Co.....
Tanite Mills .....70&5%
₱ gross, $14.40.....25@33⅓%

Sharpeners Skate—

Eureka Skate Sharpener.....₱ doz. $2.00

Shaves Spoke—

Iron.....
Wood.....doz. $1 00@1 25
Bailey's (Stanley R. & L. Co.).....50&10%
Goodell's, ₱ doz. $9.00.....15&10%

Shears—

Cast Iron...

	7	8	9 in.
Best	$16.00	18.00	20.00 gro.
Good.....	$13 00	15.00	17 00 gro.
Cheap....	$5.00	6.00	7.00 gro.

Straight Trimmers, &c.:
Best quality, Jap.....70@70&10%
" Nickel.....60@60&10%
Fair qual. Jap.....80@80&5%
" Nickel.....75@75&10%
Tailors' Shears.....40@40&10%
Acme Cast Shears.....
Heinisch's Tailors' Shears.....40@40&5%
Wilkinson's Hedge.....40%
Wilkinson's Sheep.....50%

Tinners' Snips—

Steel Blades.....1900 list, 50%
Steel Laid Blades .....20&10%
Forged Handles, Steel Blades, Berlin..40@40&10%
Jennings & Griffin Mfg. Co's. 7 to 10 inch .....
Niagara Snips.....50%
P. S. & W. Co.....40%

Pruning Shears and Tools—

Cronk's Grape Shears.....
Cronk's Pruning Shears.....33⅓%
Disston's Combined Pruning Hook and Saw, ₱ doz. $18.00.....25@25&10%
Disston's Pruning Hook, ₱ doz. $12.00 .....25@25&10%
John T. Henry Mfg. Company
Pruning Shears, all grades.....40@40&5%
Orange Shears.....
Grape.....50&10@50&20%
Tree Pruners.....40&10@50%
Nagler's Pruning Shears.....75%
P., S. & W. Co.....10&5%

Sheaves—Sliding Door—

Stowell's Anti-Friction.....33⅓%
Patent Roller Hatfield's, Sargent's list.....50%
Reading.....75&10&10%
R. & E. list.....70&10@75%
Wrightsville, Hatfield Pattern.....33⅓%

Sliding Shutter—

Reading list.....70&10@75%
R. & E. list.....
Sargent's list.....33⅓%

Shells—Shells, Empty—

Brass Shells, Empty:
First quality, all gauges.....60&5%
Climax, Club, Rival, 10 and 12 gauge..65&5%
Paper Shells, Empty:
Acme, Ideal, Leader, New Rapid, Smokeless 10, 12, 16 and 20 gauge, 33⅓&10%
Blue Rival, New Climax, Primrose Club, Yellow Rival, 10, 12, 16 and 20 gauge.....
Climax Club, League, Rival, 14, 16 and 20 gauge ($7.50 list).....15%
Climax Club, League, Rival 10 and 12 gauge.....20&5%
Defiance, High Base, New Victor, Nitro, Repeater, 10, 12, 16 and 20 gauge.....25&5%
Trap and Metal Lined, 10, 12, 16 and 20 gauge.....15%

Shells, Loaded—

Loaded with Black Powder.....33⅓&10&5%
Loaded with Smokeless Powder, medium grade.....40@10&5%
Loaded with Smokeless Powder, high grade.....40@10@10&5%

Shoes, Horse, Mule, &c.—

F. o. b., Pittsburg.
Iron.....per keg $3.50
Steel.....per keg 3.25
Barden's, all sizes, ₱ keg.....$3.60

Shot—

Drop, up to B, 25-lb. bag....$1.50@1.50
Drop, B and larger, per 25-lb. bag.. $1.65@1.75
Buck, 25-lb. bag.....$1.65@1.75
Chilled, 25 lb. bag.....$1.45@1.55
Dust Shot, 25-lb. bag.....$1.90@2.00
Tatham's Chilled.....$1.75

NOTE.—*There is some irregularity in prices and jobbers often undersell the manufacturers.*

Shovels and Spades—

No. 2, Polished, Sq. or Rd. Point, D or L Handle:

	A1, 1st Grade.	*B2, 2d Grade*
Plain Back....	$10 50	$9 60
Strap Back....	9.90	9 00
Cleveland Pat'n	10.20	9.30
	C3, 3d Grade.	*D4, 4th Grade*
Plain Back....	$8.70	$8.10
Strap Back....	8.10	7.50
Cleveland Pat'n	8.40	7.80

All other sizes add 30c doz.
Black deduct 30c doz.

Note.—The above are the regular Association prices to small retailers, but are

often shaded by jobbers $0.50@1.00, and Common, Plain Back Shovels are generally sold by jobbers at $5.75.

Sieves and Sifters—

Hunter's Imitation..gro. $9.50@10.00
Buffalo Metallic Blued, S. S. & Co., ₱ gr.:

14&16	16&18	18&20
$13.90	$13.80	$15.00

F. J. Meyers' Mfg. Co.:
Eclipse.....₱ gr. $9.25
Excelsior.....₱ gr. $10.35
Hunter's Genuine.....₱ gr. $12.50
No Name, Hunter's.....₱ gr. $11.50
Standard.....₱ gr. $10.35
Shaker (Barler's Pat.) Flour Sifters..
₱ doz., $2.00.....90%

Sieves, Tin Rim—

Per dozen

Mesh	14	16	18	20
Black, full size	$0.95	.98	1.00	1.10
Plated, full size	$1.05	1.08	1.10	1.20
Black, scant	$0.78	.80	.85	

Sieves, Wooden Rim—

Nested, 10, 11 and 12 Inch.

Mesh 18, Nested, doz.....$0.65@0.75
Mesh 20, Nested, doz.....75@ .85
Mesh 24, Nested, doz.....90@1.00

Sinks—

Cast Iron—

Standard list.....65@65&10%
NOTE.—*There is not entire uniformity lists used by jobbers.*

Wrought Steel—

New Era, Galv'd and Enameled...70&5%
New Era, Painted.....50&10%
L. & G. Mfg. Co., Galvanized.....50%
L. & G. Mfg Co., Enameled.....50%

Skeins, Wagon—

Cast Iron.....70@10@75%
Malleable Iron.....40@10@50%
Steel.....40@40@10%

Slates—

"D" Slates.....40@10@50%
Unexcelled Noiseless Slates.6x8 10@10x10@9x8 10@10x10@10x10 10@10x12.....35@40@5%
Wire Bound.....35@40@5%
Double Slates, add $1 case, net.

Slaw Cutters—See *Cutters.*

Slicers, Vegetable—

Sterling $2.00.....33⅓%

Snaps, Harness—

German.....40@40@10%
Covert Mfg. Co.:
Derby.....35&2%
High Grade.....45&2%
Jockey.....40&2%
Trojan.....45&2%
Yankee.....35&2%
Yankee, Roller.....35&2%
Covert's Saddlery Works:
Crown.....60%
German.....60%
Model.....60%
Triumph.....60%
W. & E. T. Fitch Co.:
Bristol.....40&10%
Empire.....50&5%
German.....40%
National.....50&5%
Perfect.....40%
Clipper.....50&5%
Champion.....40%
Security.....40%
Victor.....60&5%
Oneida Community:
Solid Steel.....65@65&10%
Solid Swivel.....65&10@65&10&10%
Sargent's Patent Guarded.....66⅔&10%

Snaths—

Scythe.....45@5@5%

Snips, Tinners'—See *Shears.*

Soldering Irons—

See *Irons, Soldering.*

Spoke Trimmers—

See *Trimmers, Spoke.*

Spoons and Forks—

Silver Plated—

Good Quality.....60@10@60@10@5%
Cheap.....60@60@10%
International Silver Co.:
1847 Rogers Bros.....40&10%
Rogers & Bro., William Rogers Eagle Brand, and Rogers & Hamilton.50&10%
Anchor, Rogers Brand.....60%
Wm. Rogers & Son.....60&10%
Simeon L. & Geo. H. Rogers Co.:
Silver Plated Flat Ware.....60%
No. 77 Silver Plated Ware.....60&10%

Miscellaneous—

German Silver.....60@10@60@10@10%
Simeon L. & Geo H. Rogers Co.:
German or Nickel Silver, Special list L.&10%

Tinned Iron—

Teas.....per gro. 45@5%c
Tables.....per gro. 90c@$1.00

Springs—

Door—

Gem (Coil).....20%
Star (Coil).....30%
Torrey's Rod, 39 in....₱ doz. $1.10@1.25
Victor (Coil).....59&10&10%

Carriage, Wagon, &c.

Factory Shipments.

1¼ in and wider	Blk. Hf.	Brt.	Brt.
	5½	5½	6c lb

Sprinklers, Lawn—

Enterprise.....25@30%
Philadelphia No. 1, ₱ doz. $12; No. 2, $15; No. 3, $24.....30%

Squares—

Nickel plated....} List Jan. 5, 1900
Steel and Iron...}.....70@10@75%
Rosewood Hdl Try Square and T-Bevels.....60@10@10@70%
Iron Hdl. Try Squares and T-Bevels. 40@10@40@10@10%
Disston's Try Sq. and T-Beve's.....60&10%
Winterbottom's Try and Miter.....50&10%

Squeezers—

Lemon—

Wood, Common, gro., No. 0, $5.25 @$5.50; No. 1, $6.25@$6.50.
Wood, Porcelain Lined:
Cheap.....doz. $2.00@2.75
Good Grade.....doz. $3.00@3.50
Tinned Iron.....doz. $0.75@1.25
Iron, Porcelain Lined doz. $2.90@3.25
Jennings' Star.....₱ doz. $1.85@1.90

Staples—

Barbed Blind.....lb. 7@7¼c
Electricians', Association list..... 80@10&10&10%
Fence Staples, same price as Barbed Wire. See Trade Report.
Poultry Netting, Staples....per lb.. 5¼@5¼c
Grand Crossing Tack Co.'s list....80&10%

Steels, Butchers'—

Dick's.....30%
Foster Bros'.....30%
C. & A. Hoffmann's.....40%

Steelyards.....25@25&10%

Stocks and Dies—

Blacksmiths'.....40@40&10%
Gardner Die Stocks No. 1.....50%
Gardner Die Stocks, larger sizes.....40%
Green River.....25%
Lightning Screw Plate.....25%
Little Giant.....25%
Reece's New Screw Plates.....25@30%
Curtis Reversible Ratchet Die Stock.25%

Stone—

Scythe Stones—

Chicago Wheel & Mfg. Co:
Gem Corundum, 10 inch, $9.00 per gro., 12 inch, $10.80
Pike Mfg. Co. 1901 list:
Black Diamond S. S....₱ gro. $12.00
Lamoille S. S.....₱ gro. $11.00
White Mountain S. S.....₱ gro. $9.00
Green Mountain S. S.....₱ gro. $6.00
Extra Indian Pond S. S. ₱ gro. $7.50
No. 1 Indian Pond S. S..₱ gro. $7.00
No. 2 Indian Pond S. S..₱ gro. $4.50
Leader Red End S. S....₱ gro $4.50
Balance of 1901 list 33⅓%

Oil Stones, &c.

Chicago Wheel & Mfg. Co., 1901 list:
Gem Corundum Oil, Double Grit.....50%
Gem Corundum Axe, Single or Double Grit.....35%
Gem Corundum Slips.....55%
Gem Corundum Razor Hones.....33⅓%
Pike Mfg. Co. 1901 list:

	₱ D
Arkansas Stone, No. 1, 8 to 5½ in.	$2.80
Arkansas Stone, No. 1, 5½ to 8 in.	$3.50
Arkansas Slips No. 1	$4.00
Lily White Washita 4 to 8 i	60¢
Rosy Red Washita, 4 to 8 in	60¢
Washita Stone, Extra, 4 to 8 in.	50¢
Washita Stone, No. 1, 4 to 8 in.	40¢
Washita Stone, No. 2, 4 to 8 in.	30¢
Lily White Slips	90¢
Rosy Red Slips	90¢
Washita Slips, Extra	80¢
Washita Slips, No. 1	70¢

25% 33⅓%

India Oil Stones (entire list).....25%
Hindostan No. 1, Regular....₱ D 80¢
Hindostan No. 1 Small.....₱ D 10¢ } 40%
Axe Stones (all kinds).....40%
Turkey Oil Stones, ex. 5 tos in. ₱ D 80¢
Queer Creek Stones, 4 to 8 in.....30¢ } 33⅓%
Queer Creek Slips.....10¢
Sand Stone.....5¢.....40%
Belgian, German and Swaty Razor Hones.....40%
Natural Grit Carving Knife Hones, ₱ doz.....$3.00
Quick Edge Pocket Knife Hones, ₱ doz.....$3.00 } 33⅓%
Mounted Kitchen Sand Stone, ₱ doz.....$1.50
Tanite Mills:
Emery Oil, ₱ doz. $5.00.....50@60%

Stoners—

Cherry—

Enterprise.....25@30%

Stops, Bench—

Millers Falls.....15&10%
Morrill's....₱ doz., No. 1, $10.00...50&20%
Morrill's, No. 2, $11.00.....50&10%

Stops, Window—

Ives' Patent.....35&5%

Stove Boards—

See *Boards, Stove.*

Stove Polish—See *Polish, Stove.*

Strainers Pump—

Diamond Joe Pump Strainers..per doz. 75¢

Straps, Box—

Cary's Universal case lots.....20&10%

Stretchers, Carpet—

Cast Iron, Steel Points....doz. 55@65c
Socket.....doz. $1.75

Strops, Razor—

Smith & Hemenway Co.....70%

Stuffers, Sausage—

Enterprise Mfg. Co.....25@25&7½%
National Specialty Mfg. Co., list Jan. 1, '97.....30%

Tacks Brads, &c.—

List Jan. 15, '99.

Carpet Tacks, American 90@30@....%
American Cut Tacks....90@20@....%
Swedes Iron Tacks....90@30@....%
Swedes Upholsterers' Tacks..... 90@40@....%
Gimp Tacks.....90@40@....%
Lace Tacks.....90@40@....%
Trimmers' Tacks.....90@20@....%
Looking Glass Tacks.....70@10%
Bill Posters' and Railroad Tack.... 90@20@....%
Hungarian Nails.....80@15%
Common and Patent Brads.....80@10%
Trunk and Clout Nails.....80@10%

NOTE.—*The above prices are for straight Weights.* An extra 5% is given Star Weights** and an extra 10&5% on Standard Weights.****

Miscellaneous—

Double Point Tacks....90@8 or 7 tens
Steel Wire Brads, R. & E. Mfg. Co.'s list.....50@10@60%
See also *Nails, Wire.*

Tanks, Oil—

Emerald, S. S. & Co.....30-gal. $3.90
Emerald, S. S. & Co.....60-gal., $4.00
Queen City S. S. & Co., 30-gal.....$3.50
Queen City S. S. & Co., 60-gal.....$4.25

Tapes, Measuring—

American Asses' Skin.....40@10@30%
Patent Leather.....25@50@5%
Steel.....40@40@5%
Chesterman's.....25@25@5%
Eddy's Steel.....40@40@5%
Eddy's Metallic.....33⅓@33⅓&5%
Keuffel & Esser Co., Steel and Metallic, Lower list, 1899.....35%
Lufkin's Steel.....33⅓@35%
Lufkin's Metallic.....30@30@5%

Teeth Harrow—

Steel Harrow Teeth, plain or headed, base per lb.....2¼c

Thermometers—

Tin Case.....80@10@80@10@5%

Ties, Bale—Steel.

Standard Wire.....50@10@5%

Ties, Wall—

Cleveland Wire Spring Co.:
Galv. Steel 5-32 x 6¼ in. ₱ 1000..$10.00
Galv. Steel 5-32 x 8½ in. ₱ 1000..$11.00
Galv. Steel 5-32 x 11½ in. ₱ 1000..$12.00
Galv. Steel 5 32 x 15½ in. ₱ 1000..$14.00

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tire Benders, Upsetters, &c.—See *Benders and Upsetters, Tire.*

Tobacco Cutters—

See *Cutters, Tobacco.*

Tools—

Coopers'—

L. & I. J. White.....20@20&5%

Saw—

Atkins' Cross Cut Saw Tools.....40%
Simonds' Improved.....33⅓%
Simonds' Crescent.....25%

Ship—

L. & I. J. White.....25%

Transom Lifters—

See *Lifters, Transom.*

Traps—Game—

Oneida Pattern.....75c@5@75c@10c@5%
Newhouse.....45@45&5%
Hawley & Norton.....65&5@65&10%
Victor (Oneida Pattern).....75@75&5%
Star (Blake Pattern).....65&10@70&5%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes..... 8½@9c
Mouse, Round or Square Wire..... doz. $0.85@1.00
American Pattern French Rat and Mouse Traps—
No. 1, Detroit Marty Pattern, ₱ doz. $4.50; in ⅛ gro. lots, ₱ doz.....$4.00
No. 2, Detroit Marty Pattern, ₱ doz. $3.25; in ⅛ gro. lots, ₱ doz.....$3.00
Detroit Marty Pattern Mouse, ₱ doz. $2.00; in ⅛ gro. lots, ₱ doz.....$1.75
Diamond Joe Mouse Traps....per doz. 60¢
Diamond Joe Rat Traps.....per doz. $1.00
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, Each $1.12½;..₱ doz. $12.00
No. 3, Rat, ₱ doz. $6.00; case of 50 $5.25 doz.
No. 3½, Rat, ₱ doz. $4.75; case of 72 $4.25 doz.
No. 4, Mouse, ₱ doz. $3.50; case of 72 $2.75 doz.
No. 5, Mouse, ₱ doz. $2.75;..case of 72 $2.25
Schuyler's Rat Killer, No. 1, ₱ gr. $30.00; No. 2, ₱ gr. $30.00; Mouse, No. 3, $18.00.....50%

Fly—

Balloon, Globe or Acme..... doz. $1.13@1.25; gro. $10.50@11.00
Harper, Champion or Paragon ... doz. $1.25@1.40; gro. $12.00@13 50

Trimmers, Spoke—

Bonney's Nos. 1 and 2.....40%

Trowels—

Disston Brick and Pointing.....30%
Disston Plastering.....25%
Disston "Standard Brand" and Garden Trowels.....40%
Never-Break Steel Garden Trowels.... gro. $7.00
Peace's Plastering.....30%
Rose Brick and Plastering.....25&5%
Woodrough & McParlin Plast'ring.....25%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list.....50%
Daisy Stove Trucks, improved pattern ₱ doz. $18.50
Model Stove Trucks.....₱ doz. $18.50

Tubs, Wash—

	No. 1	2	3
Galvanized, per doz.	*$5.00*	*5 50*	*6.00*

Galvanized Wash Tubs (S. S. & Co.):

No.	1	2	3	10	20	30
Per doz.	$5 25	6.00	6.75	6.50	7 25	8.00

Twine—

Binder—

Small lots f. o. b. New York, Philadelphia or Boston.
White Sisal, 500 ft. to lb. per lb...8¼c
Standard, 500 ft. to lb.. per lb....8½c
Manila, 600 ft. to lb.....per lb...10½c
Pure Manila, 650 ft. to lb. per lb. 11¼c
For carloads deduct ¼c per lb.

Miscellaneous—

Flax Twine—	*BC*	*B.*
No. 9, ¼ and ½-lb. Balls	*22c*	*24c*
No. 12, ¼ and ½-lb. balls	*18c*	*20c*
No. 18, ¼ and ½-lb. Balls	*16c*	*18c*
No. 24, ¼ and ½-lb. Balls	*15½c*	*17½c*
No. 36, ¼ and ½-lb. Balls	*15c*	*17c*

Chalk Line, Cotton, ½-lb. Balls.... 22@22½c
Cotton Mops, 6, 9, 12 and 15 lb. to doz.....7@8c
Cotton Wrapping, 5 Balls to lb ... according to quality...10½c@17c
American 2-Ply Hemp, ¼ and ½-lb. Balls.....12@13c
American 3 Ply Hemp, 1-lb. Balls.. 12@13c
India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine).....8½c
India 3-Ply Hemp, 1-lb. Balls.....8½c
India 3-Ply Hemp, 1½-lb. Balls.....7c
2, 3, 4 and 5-Ply Jute, ½-lb. Balls... 9½@10c
Mason Line, Linen, ½-lb. Balls...45c
No. 2½ Mattress, ¼ and ½-lb. Balls.3c
Wool.....7c

Vises—

Solid Box.....50%

Parallel—

Athol Machine Co.:
Simpson's Adjustable.....40%
Standard.....40%
Amateur.....25%
Bonney's.....40%
Fisher & Norris Double Screw....15&10%
Hollands':
Machinists'.....40%
Keystone.....65&5%
Lewis Tool Co.....20@30%
Massey's Perfect.....15@20%
Massey's:
Clincher.....30@40%
Combination, Quick Adj.....40%
Woodworker's.....15@20%
Merrill's.....20%
Miller's Falls.....50&10&10%
Parker's:
Victor.....20@25%
Regulars.....20@25%
Vulcan's.....40@45%
Combination Pipe.....55@60%
Prentiss.....20@25%
Sargent's.....40%
Simpson's Adjustable.....40%
Snediker's X. L.....20@25%
Stephens'.....20@25%
Columbian Hdw. Co.....40%

Saw Filers—

Bonney's, No. 1, $13; No. 3, $16.....50%
Diston's D 3 Clamp and Guide, ₱ doz. $30.....25%
Reading.....40&10%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3.....45&50%

Miscellaneous—

Bignall & Keeler Combination Pipe Vise.....60%
Parker's Combination Pipe:
87 Series.....60%
187 Series.....60&5%
No. 870.....40%

Wads—Price Per M.

B. E., 11 up	60c
B. E., 9 and 10	70c
B. E., 8	80c
B. E., 7	80c
P. E., 11 up	$1.00
P. E., 9 and 10	1.25
P. E., 8	1.50
P. E., 7	1.80

Dia. Shot

Ely's B. E., 11 and larger..$1.70@1.75
Ely's P. E., 12 to 20.....$3.00@3.25

Wagon Jacks—

See *Jacks, Wagon.*

Ware, Hollow—

Aluminum—
S. S. & Co. Reduced List.....40%

Cast Iron, Hollow—

Stove Hollow Ware:
Ground.....65%
Unground.....70%
White Enameled Ware:
Maslin Kettles.....75c@10c@5@80%
Covered Ware:
Tinned and Turned..... 40c@10@40@10c@5%
Enameled and Plain..50@50c@10c@5%
See also *Pots, Glue.*

Enameled—

Agate Nickel Steel Ware, list July '99, 33⅓&10%
Granite Ware, list Jan. 1, '94, revised Jan. 2, '95.....40&10%
L. & G. Opal Enameled Ware.....65%
Second Quality, Granite..... 70&10@70&10&10%
Iron Clad Ware.....70&10%
Never Break Enameled....50&5@50&10%

Tea Kettles—

Galvanized Tea Kettles:

Inch	*6*	*7*	*8*	*9*
Each	*45c*	*50c*	*55c*	*65c*

Steel Hollow Ware.

Avery Spiders & Griddles....65@65&5%
Avery Kettles.....60%
Porcelained.....50&5@50&10%
Never Break Spiders and Griddles..... 65&5%
Never Break Kettles.....60%
Solid Steel Spiders & Griddles.....65&5%
Solid Steel Kettles.....60%
Solid Steel Ware, Enameled.....50&5%

Washboards—

Solid Zinc: ₱ doz.
Crescent, family size, bent frame..$3.00
Red Star, family size, stationary protector.....$3.00
Double Zinc Surface:
Saginaw Globe, family size, stationary protector.....$2.65
Cable Cross, family size, stationary protector.....$2.90
Single Zinc Surface:
Naiad, family size, open back perforated.....$2.40
Saginaw Globe, protector, family size, ventilated back.....$2.25
Brass Surface:
Brass King, Single Surface, open back.....$3.00
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface.....$3.50

Washers—
Leather, Axle—

Solid.....85@85&10%
Patent.....85&10@85&20%
Coil: ⅞ 1 1⅛ 1¼ Inch.
10c 11c 12c 13c per 100

Iron or Steel—

Size bolt.... 5-16 ⅜ ½ ⅝ ¾
Washers....$5.20 4.50 3.00 2.80 2.60
In lots less than one keg add ¼c per lb., 5-lb. boxes add ½c to list.

Cast Washers—

Over ½ inch, barrel lots, per lb.....1⅛@1¼c

Washer Cutters—
See *Cutters, Washer.*

Washing Machines—
See *Machines, Washing.*

Water Coolers—
See *Coolers, Water.*

Wedges—
Oil Finish.....lb. 2.90@3.10c

Weights, Sash—
Per ton, f.o.b. factory....$19.00@22.50
Some Foundries make price $1@$2 lower.

Well Buckets, Galvanized
See *Pails, Galvanized.*

Wheels Well—
8-in., $1.65@1.75; 10-in., $2.00@2.10; 12-in., $2.50@2.75; 14-in., $3.25@4.40

Wire and Wire Goods—
Brt. and Ann., 6 to 9.70&10@70&10c&5%
Brt. and Ann., 10 to 18.72½@72½&10%
Brt. and Ann., 19 to 26.75&7½@75&10%
Brt. and Ann., 27 to 36.....
A75&10@75&10c&5%
Cop'd and Galv., 6 to 9.....70@70c&5%
Cop'd and Galv., 10 to 18.....
70c&5@70c&10%
Cop'd and Galv., 19 to 26.....
75@75c&5%
Cop'd and Galv., 27 to 36.....
75c&5@75c&10%
Tinned, 6 to 9.....75@75c&5%
Tinned, 10 to 18.....70c&5@70c&10%
Tinned, 19 to 26.....70@70c&5%
Tinned, 27 to 36.....65c&10@70%
Annealed Wire on Spools..70c&5@70c&10%
Brass and Copper Wire on Spools..60c&5@60c&10%
Brass, list Feb. 26, '98.....35%
Copper, list Feb. 26, '98.....15%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$3.00 to $, 40%
Wire Clothes Line, see *Lines.*
Wire Picture Cord, see *Cord.*

Bright Wire Goods—

List April 1, 1901.....35c&10@...%

Wire Cloth and Netting—
Galvanized Wire Netting...35@35c&5%
Painted Screen Cloth per 100 ft.....
$1.00@1.10

Light Hardware Grade:
2-18 Mesh, Plain (8c. list) sq. ft...
1⅛@1¾c
2-18 Mesh, Galv. (8c. list) sq ft...
2⅛@2¾c

Wire Barb—See *Trade Report.*

Wire, Rope—See *Rope, Wire.*

Wrenches—
Agricultural.....70c&10@75c&5%
Case lots.....75c&10%
Acme.....60&10%
Alligator.....70%
Baxter's S.....60&10%
Bull Dog.....70%
Bemis & Call's:
Adjustable S.....35&5%
Adjustable S Pipe.....40%
Brigg's Pattern.....30&10%
Combination Black.....40&5%
Combination Bright.....40%
Cylinder or Gas Pipe.....55%
Extra Heavy.....45%
Merrick's Pattern.....50%
No. 3 Pipe, Bright.....55%
Bindley Automatic.....30%
Boardman's.....33⅓%
Coes' Genuine.....40&10&5&5%
Coes' "Mechanics'".....40&10&10&5&5%
Donohue's Engineer.....40&10%
Eagle.....50&10%
Gem Pocket.....30%
Hercules.....70%
Knife Handle, Machinists' (W. & B.):
Case lots.....50&10%
Less than case lots.....50&5%
Improved Pipe (W. & B.).....6%
Solid Handles, P.S. & W.....50@50&10%
Triumph.....60&10%

Wrought Goods—
Staples, Hooks, &c., list March 17 '92.....85&25@90%

Yokes, Neck—
Covert Saddlery Works, Trimmed.60&5%
Covert Saddlery Works, Neck Yoke Centers.....70%

Yokes, Ox, and Ox Bows—
Fort Madison's Farmers & Freighters'.. list net

Zinc—
Sheet.....lb 6½c@7c

PAINTS, OILS AND COLORS.—Wholesale Prices.

White Lead, Zinc, &c.
Lead, Foreign white, in Oil.... 7¼@ 9½
Lead, American White, in Oil:
Lots of 500 ℔ or over.....@ 6½
Lots less than 500 ℔.....@ 7
Lead, White, in oil, 25 ℔ tin pails, add to keg price.....@ ¼
Lead, White, in oil, 12½ ℔ tin pails, add to keg price.....@ 1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price...@ 1½
Lead White, Dry in bbls.....5¼@ 6
Lead, American. Terms: On lots of 500 lbs. and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.
Zinc, American, dry.....℔ ℔ 4½@ 4½
Zinc, Paris, Red Seal, dry.....@ 8½
Zinc, Paris, Green Seal, dry.....@ 9¼
Zinc, Antwerp Red Seal, dry...@ 6½
Zinc, Antwerp, Green seal, dry ...@ 7¼
Zinc, V. M. French, in Poppy Oil, Green Seal:
Lots of 1 ton and over.....12 @12½
Lots of less than 1 ton.....12¼@12¾
Zinc, V. M. French, in Poppy Oil, Red Seal:
Lots of 1 ton and over.....10¾@11¼
Lots of less than 1 ton.....11@11½
Discounts.—V. M. French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1%; 25 bbls., 2%; 50 bbls., 4%.

Dry Colors.
Black, Carbon.....℔ ℔ 8 @20
Black, Drop, Amer.....4 @ 7
Black, Drop, Eng.....7 @11
Black, Ivory.....12 @21
Lamp, Com.....4½@ 6
Blue, Celestial.....℔ ℔ 4 @ 6
Blue, Chinese.....30 @35
Blue, Prussian.....28 @34
Blue, Ultramarine.....4 @20
Brown, Spanish.....½@ 1
Brown, Vandyke, Amer.....1½@ 2½
Brown, Vandyke, Foreign.....2½@ 3½
Carmine, No. 40.....℔ ℔2.05@2.75
Green, Chrome, ordinary.....5 @ 6½
Green, Chrome, pure.....16 @29
Lead, Red, bbls. ½ bbls. and kegs:
Lots 500 ℔ or over.....@ 6
Lots less than 500 ℔.....@ 6½
Litharge, bbls. ½ bbls. and kegs:
Lots 500 ℔ or over.....@ 6
Lots less than 500 ℔.....@ 6½
Ocher, French Washed.....1½@ 1½
Ocher, Dutch Washed.....4½@ 5
Ocher, American....℔ ton$10.00@15.00
Orange Mineral, English..℔ ℔ 8½@11½
Orange Mineral, French.....11½@11¾
Orange Mineral, German.....8½@ 9½
Orange Mineral, American....8 @ 8½
Red, Indian, English.....4½@ 8½
Red, Indian, American.....8 @ 8½
Red, Turkey, English.....4 @ 6
Red, Tuscan, English.....7 @10
Red, Venetian, Amer.,℔ 100 ℔. 80@1.75
Red Venetian, English,℔100 ℔.1.80@3.00
Sienna, Italian, Burnt and Powdered.....℔ ℔ 3½@ 7½
Sienna, Ital., Raw, Powd.....3½@ 7½
Sienna, American, Raw.....1½@ 2
Sienna, American, Burnt and Powdered.....℔ ℔ 1½@ 2
Talc, French.....℔ 100 ℔ $1.25@1.50
Talc, American.....90 @1.10
Terra Alba, French, ℔ 100 ℔..95 @1.00
Terra Alba, English.....95 @1.00
Terra Alba, American No. 1....65 @85
Terra Alba, American No. 2....45 @50
Umber, Turkey, Bnt.& Pow.℔ ℔ 2½@ 3½
Umber, Turkey, Raw & Powd. 2½@ 3½
Umber, Bnt. Amer.....1½@ 2
Umber, Raw, Amer.....1½@ 2
Yellow, Chrome.....10½@25
Vermilion, American Lead.....10 @40
Vermilion, Quicksilver, bulk...@70
Vermilion, Quicksilver, bags...@71
Vermilion, English, Import...80 @95
Vermilion, Chinese.....$1.05@1.20

Colors in Oil.
Black, Lampblack.....19 @14
Blue, Chinese.....36 @40
Blue, Prussian.....32 @36
Blue, Ultramarine.....13 @16
Brown, Vandyke.....9½@13
Green, Chrome.....10 @12
Green, Paris.....@24
Sienna, Raw.....10 @13
Sienna, Burnt.....10 @13
Umber, Raw.....9½@12
Umber, Burnt.....9½@12

Miscellaneous.
Barytes, Foreign, ℔ ton....$19.00@21.00
Barytes, Amer. floated.....19.00@20.00
Barytes, Crude, No. 1.....9.00@10.00
Chalk, in bulk.....℔ ton 2.50@ 2.75
Chalk, in bbls.....℔ 100 ℔ ...@ 35
China Clay, English..℔ ton 12.00@17.50
Cobalt, Oxide.....℔ 100 ℔ 2.20@ 2.50
Whiting, Common. ℔ 100 ℔ .40@ .60
Whiting, Gilders.....45½@ .65
Whiting, extra Gilders'.... .55@ .68

Putty.
In bulk.....$1.25
In bladders.....2.25
In cans, 12 ℔ to 25 ℔.....2.25
In cans, 1 ℔ to 5 ℔.....3.25

Spirits Turpentine.
In Southern bbls.....37 @37½¢
In machine bbls.....37½@38 ¢

Glue.
Low Grade.....℔ ℔ 9 @12
Cabinet.....11½@16
Medium White.....14½@16¼
Extra White.....18 @23
French.....12 @40
Irish.....13¾@16

Animal, Fish and Vegetable Oils.
Linseed, City, raw.....℔ gal. 82@83
Linseed, City, boiled.....84 @85
Linseed, State and West'n, raw 80 @81
Linseed, raw Calcutta seed.....@85
Lard, Prime.....69 @70
Lard, Extra No. 1.....50 @52
Lard, No. 1.....43 @44
Cotton-seed, Crude.....@ ..
Cotton-seed, Summer Yellow, prime.....39 @40
Cotton-seed Summer Yellow, off grades.....38 @38¼
Sperm, Crude.....@ ..
Sperm, Natural Spring.....@ ..
Sperm, Bleached Spring.....@ ..
Sperm, Natural Winter.....61 @62
Sperm, Bleached Winter.....64 @65
Whale, Crude.....@ ..
Whale, Natural Winter.....@45
Whale, Bleached Winter.....@47
Menhaden, Crude, Sound.....25 @26
Menhaden, Light Strained.....32 @33
Menhaden, Bleached Winter...34 @35
Menhaden, Ex Bleached Winter 37 @38
Tallow, prime.....51 @52
Cocoanut, Ceylon.....5¾@ 6
Cocoanut, Cochin.....6.00 @ 7
Cod, Domestic.....32 @33
Cod, Newfoundland.....34 @35
Red Elaine.....34 @35
Red Saponified.....℔ ℔ 4½@ 5
Olive, Italian, bbls.....62½@ 63
Neatsfoot, prime.....52 @54
Palm, prime, Lagos.....℔ ℔ 5½@5¾

Mineral Oils.
Black, 20 gravity, 25@30 cold test.....℔ gal. 9½@ 9¾
Black, 29 gravity, 15 cold test. 10¾@10¾
Black, summer.....8¾@ 9½
Cylinder, light filtered.....14¼@17½
Cylinder, dark filtered.....11½@15½
Paraffine, 903-907 gravity.....12½@12¾
Paraffine, 903 gravity.....11¼@11¾
Paraffine, 883 gravity.....9¾@10
Paraffine, red, No. 1.....12¾@12¾
In small lots ¼¢ advance.

THE IRON AGE.

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CURRENT METAL PRICES.

JULY 17, 1901.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Common Iron: Duty, Round, 0.6¢ ₱ lb; Square, 0.8¢ ₱ lb
1 to 1⅝ in. round and square ..... } ₱ lb 1.75@1.85¢
1⅛ to 4 in. x ⅜ to 1 in..... }
Refined Iron:
1 to 1⅝ in. round and square..... } ₱ lb 1.85@1.95¢
1⅛ to 4 in. x ⅜ to 1 in..... }
1⅛ to 4 in. x ¼ to 5-16..... ₱ lb 2.00@2.05¢
Rods—⅜ and 11-16 round and square. ₱ lb 2.20@2.30¢
Angles: Cts ₱ lb
3 in. x ¼ in. and larger..... 2.20¢
3 to 3½ in. x 3-16 in..... 2.20¢
1½ to 3 in. x ¼ in ..... 2.20¢
1⅜ to 2¾ in. x 3-16 in and thicker..... 2.10¢
1 to 1¼ in. x 3-16 in..... 2.20¢
1 to 1¼ x ⅛ in..... 2.30¢
⅞ x ⅛ in..... 2.40¢
⅝ x ⅛ in..... 2.50¢
⅝ x ⅛ in..... 3.50¢
½ x 3-32 in..... 4.00¢
Tees:
1 in..... 2.60¢
1¼ in..... 2.40¢
1½ in, and larger..... 2.30¢
Beams..... 2.25¢
Channels, 3 in. and larger..... 2.25¢
Bands—1¼ to 6 x 3-16 to No. 8..... ₱ lb 2.20¢
"Burden's Best" Iron, base price..... ₱ lb 3.15¢
Burden's "H. B & S. Iron, base price..... ₱ lb 2.95¢
"Ulster"..... ₱ lb 3.60¢
Norway Bars..... 3.75@4.25¢
Norway Shapes..... 4.00@4.50¢

Merchant Steel from Store—

per lb
Bessemer Machinery..... 1.90 to 1.95¢
Toe Calk, Tire and Sleigh Shoe..... 2.00@2.50¢
Best Cast Steel, base price in small lots..... 7½¢
Best Cast Steel Machinery, base price in small lots..... 6 ¢

Soft Steel Sheets—

¼ inch.....	2.20¢	No. 14.....	2.70¢
3-16 inch.....	2.30¢	No .16.....	2.90¢
No. 8.....	2.30¢	No. 18.....	3.10¢
No. 10.....	2.50¢	No. 20.....	3.40¢
No. 12.....	2.60¢	No. 22.....	3.50¢

Sheet Iron from Store.

Black.

	One Pass, C. R. Soft Steel.	R. G. Cleaned.
Nos. 14 to 16.....	₱ lb, 3.25.....	3.30¢
Nos. 18 to 21.....	₱ lb, 3.35.....	3.40¢
Nos. 22 to 24.....	₱ lb, 3.45.....	3.50¢
Nos. 25 and 26.....	₱ lb, 3.55.....	3.60¢
No. 27.....	₱ lb, 3.65.....	3.70¢
No. 28.....	₱ lb, 3.75.....	3.80¢

Russia, Planished, &c.

Genuine Russia, according to assortment..... ₱ lb 10½¢
Patent Planished..... ₱ lb A, 9¾¢; B, 8½¢, net.

Galvanized.

	B. B.
Nos. 10 to 16.....	₱ lb, 12¢
Nos. 17 to 21.....	₱ lb, 13¢
Nos. 22 to 24.....	₱ lb, 14¢
Nos. 25 to 26.....	₱ lb, 15¢
No. 27.....	₱ lb, 16¢
No. 28.....	₱ lb, 17¢
No. 29.....	₱ lb, 19¢
No. 30.....	₱ lb, 21¢

60 & 5% off

30 in. 1¢ ₱ lb higher.

Foreign Steel from Store—

Best Cast..... ₱ lb 15 ¢
Extra Cast..... ₱ lb 18 @ 20 ¢
Swaged, Cast..... ₱ lb 16 ¢
Best Double Shear..... ₱ lb 15 ¢
Blister, 1st quality..... ₱ lb 13 ¢
German Steel, Best..... ₱ lb 10 ¢
2d quality..... ₱ lb 9 ¢
3d quality..... ₱ lb 8 ¢
Sheet Cast Steel, 1st quality..... ₱ lb 15 ¢
2d quality..... ₱ lb 14 ¢
3d quality..... ₱ lb 12 ¢
R. Mushet's "Special" ..... ₱ lb 46 ¢
" " Annealed ..... ₱ lb 75 ¢
" " "Titanic" ..... ₱ lb 19 ¢
Hobson's Choice XX Extra Best..... ₱ lb 35 ¢
Jessop Self Hardening..... ₱ lb 45 ¢
Seamans' "Nelson" Steel..... 40 ¢
Hobson's "Soho" Special Self-Hardening..... ₱ lb 43 ¢

METALS—

Tin—

Duty.—Pigs, Bars and Block. Free.	Per lb
Banca, Pigs.....	28½@30 ¢
Straits, Pigs.....	28½@28¾¢
Straits in bars.....	29½@29¾¢

Tin Plates—

American Charcoal Plates.

Calland Grade:
IC, 14 x 20..... $6.75
IX, 14 x 20..... 8.25
Melyn Grade:
IC, 14 x 20..... 6.25
IX, 14 x 20..... 7.75
Allaway Grade:
IC, 14 x 20..... 5.50
IX, 14 x 20..... 6.00

American Coke Plates—Bessemer—

IC, 14 x 20 .....108 lb..... $4.85@4.90
IX, 14 x 20..... 5.95@6.00
IXX 14 x 20..... 7.20@7.25

American Terne Plates—

IC, 20 x 28..... 9.50
IX, 20 x 28..... 11.25

Tin Boiler Plates, American—

IXX, 14 x 26.....112 sheets..... $12.50
IXX, 14 x 28.....112 sheets..... 13.50
IXX, 14 x 31.....112 sheets..... 15.00

Copper—

Duty: Pig, Bar and Ingot and Old Copper free Manufactured, 2½¢ ₱ lb.

Ingot—

Lake ..... 17¼@17½¢
Ansonia grade Casting..... 16¾@17 ¢

Sheet and Bolt—

January 19, 1900. Net.

Prices, in cents per pound. Sheet 30 x 60.

Not wider than	Not longer than	And longer than	24 oz. & over, 9 lb. sheet, 30 x 60 and heavier.	20 oz. to 24oz., 25 to 30 lb.	14 oz. to 20 oz., 18¾ to 25 lb.	16 oz. to 24 oz., 12½ to 18¾ lb.	14 oz. and 15 oz., 11 to 12½ lb.	12 oz. and 13 oz., 9½ to 11 lb.	10 oz. and 11 oz., 7¾ to 9½ lb.	8 oz. and 9 oz., 6¼ to 7¾ lb.	Lighter than 8 oz.
Ins.	Ins.	Ins.									
30	72	.....	21	21	21	21	22	23	24	27	30
30	96	72	21	21	21	21	22	24	27	30	
30	.....	96	21	21	21	21	23	27	30		
36	72	.....	21	21	21	21	23	25	28	31	
36	96	72	21	21	21	23	23	27	30		
36	120	96	21	21	21	23	24				
36	.....	120	21	21	22	23					
48	72	.....	21	21	22	23	25	28	31		
48	96	72	21	21	22	24	26	29			
48	120	96	21	21	23	25	29				
48	.....	120	21	22	24	27					
60	72	.....	21	22	22	24	27	32			
60	96	72	21	21	23	25	30				
60	120	96	21	22	24	27					
60	.....	120	21	23	25	29					
72	96	.....	21	22	24	29					
72	144	96	21	23	26	31					
72	.....	144	22	24	29						
108	120	.....	22	24	30						
108	.....	120	24	25							
wider than 108	144	.....	25	27							
	.....	144	26	29							

Rolled Round Copper, ⅜ inch diameter and over, ₱ lb 21¢.
Circles, Segments and Pattern Sheets, 3¢ ₱ lb advance over price of Sheet Copper required to cut them from.
Cold or Hard Rolled Copper 14 oz. ₱ square foot and heavier, 1¢ ₱ lb over the foregoing prices.
Cold or Hard Rolled Copper, lighter than 14 oz. ₱ square foot, 2¢ ₱ lb over the foregoing prices.
All Polished Copper, 23 in. wide and under. 1¢ ₱ lb advance over the price for Cold Rolled Copper.
All Polished Copper, over 20 in. wide, 2¢ ₱ lb advance over the price for Cold Rolled Copper.

Planished Copper—

1¢ ₱ lb more than Polished Copper.

Copper Bottoms, Pits and Flats—

14 oz. to square foot and heavier, ₱ lb ..... 25¢
12 oz. and up to 14 oz. to square foot, ₱ lb..... 23¢
10 oz. and up to 12 oz., ₱ lb..... 2 ¢
Lighter than 10 oz., ₱ lb..... 31¢
Circles less than 8 in. diameter, 2¢ ₱ lb addition al.
Circles over 13 in diameter are not classed as Copper Bottoms.

Copper Wire—

Hard and Soft Drawn—B. & S. Gauge.

List March 2, 1900.

Nos...0000 to 8 Base	9 and 10 ½¢		11 and 12 ¼¢ ₱ lb adv.
Nos..... 13	14	15	16
	¾¢	1¢	1¼¢ ₱ lb adv.
Nos..... 17	18	19	20
1½¢	2¢	2½¢	2¾¢ ₱ lb adv.

Seamless Brass Tubes—

Standard always Stubs' gauge, unless otherwise ordered.

Feb. 6, 1899. Net. Outside Diameter.

Stubs' W. G.	B. & S. W. G.	⅛	5-16	⅜	7-16	½	9-16	⅝	¾	⅞	1	1¼	1½
4-11	3- 9	...	.....	...	.....	33	31	30	29	28	27	25	24
12	10	...	.....	37	35	33	31	30	29	28	27	25	24
13	11	...	.....	37	35	33	31	30	29	28	27	25	24
14	12	...	41	37	35	33	31	30	29	28	27	25	24
15	13	...	42	38	36	33	32	31	30	29	28	26	25
16	14	...	43	39	37	34	33	32	31	30	29	26	25
17	15	...	44	40	38	35	34	33	32	31	30	27	26
18	16	61	46	42	39	36	35	34	33	32	31	28	27
19	17	62	47	43	40	37	36	35	34	33	32	29	28
20	18-19	64	49	44	41	39	38	37	36	35	34	32	31
21	20	66	51	46	43	41	40	39	38	37	36	35	34
22	21	71	56	48	44	42	41	40	39	38	37	37	36
23	22	76	61	50	46	44	43	42	41	40	39	39	39
24	23	81	66	53	48	46	45	44	43	41	40	40	41
25	24	86	71	56	51	49	47	46	45	43	43	44	45

Copper Bronze and Gilding Tube, 3¢ ₱ lb additional

Iron Pipe Sizes—Brass

⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6 inch
36	32	29	27	21	21	21	21	21	21	23	23	25	27	28	₱ lb

Copper, Bronze or Gilding Tubes, 3¢ ₱ lb additional

Brazed Brass Tubing.

(*To No. 19, inclusive.*) Feb. 26 1896

Brown & Sharpe's gauge standard.

	Per lb.
Plain Round Tube, ¾ in. up to 2 in.....	$0.35
" " ⅝ " ¾ "	.36
" " ½ " ⅝ "	.38
" " ⅜ " ½ "	.41
" " 5-16 " ⅜ "	.48
" " ¼ " 5-16"	.65
" " 3-16 " ¼ "	1.00
" " ⅛ " 3-16"	1.50
Smaller than ¼ inch.....	Special
3 inch and larger.....	.40
Over 3 inch to 3½ inch, inclusive.....	.45
Over 3½ inch.....	.50

Bronze and Copper, advance on Brass List, 3 cents.
Discount from list %..... 35%

Roll and Sheet Brass—

(*Brown & Sharpe Standard Gauge.*)

Common High Brass Wider than and including	in. 2 12	in. 12 14	in. 14 16	in. 16 18	in. 18 20	in. 20 22	in. 22 24	in. 24 26
To No. 20 inclusive.	.22	.23	.25	.27	.29	.31	.33	.36
Nos. 21 22, 23 and 24	.22	.24	.26	.28	.30	.32	.34	.37
Nos. 25 and 26	.23	.24½	.27	.29	.31	.33	.35	.38
Nos. 27 and 28	.25	.25	.28	.30	.32	.34	.36	.39

Common High Brass. Wider than and including	in. 26 28	in. 28 30	in. 30 32	in. 32 34	in. 34 36	in. 36 38	in. 38 40	in. 40
To No. 20, inclusive..	.39	.42	.46	.50	.55	.60	.65	*
Nos. 21, 22, 23 and 24.	.40	.43	.47	.51	.56	.61	.68	
Nos. 25 and 26.....	.41	.44	.48	.52	.57	.63	.71	
Nos. 27 and 28.....	.42	.45	.49	.53	.58	.65	.75	

* Special prices not less than 80 cents.

Add ½¢ ₱ lb additional for each number thinner than Nos. 28 to 38 inclusive. Discount from List..... 20%

Wire in Coils. List February 26, 1896.

Brown & Sharpe's gauge the standard.	Com. high brass.	Low brass.	Gilding bronze and copper
All Nos. to No. 10, inclusive....	$0.23	$0.27	$0.28
Above No. 10 to No. 16.....	.23½	.27½	.28½
No. 17 and No. 18.....	.24	.28	.32
No. 19 and No. 20.....	.25	.29	.33
No. 21.....	.26	.30	.34
No. 22.....	.27	.31	.35
No. 23.....	.28	.32	.36
No. 24.....	.30	.34	.38
No. 25.....	.32	.36	.40
No. 26.....	.35	.39	.43
No. 27.....	.38	.42	.46
No. 28.....	.42	.46	.51
No. 29.....	.45	.49	.54
No. 30.....	.48	.52	.62
No. 31.....	.51	.55	.67
No. 32.....	.55	.59	.73
No. 33.....	.59	.63	.82
No. 34.....	.64	.68	.95
No. 35.....	.70	.74	1.30
No. 36.....	.76	.80	1.50
No. 37.....	1.00	1.04	1.70
No. 38.....	1.30	1.34	2.00
No. 39.....	2.00	2.00	3.25
No. 40.....	2.60	2.60	5.75

Discount, Brass Wire, 20%; Copper Wire, Net. List November 16, 96.

Spring Wire, 2¢ ₱ lb advance.

Tobin Bronze—

Straight, but not turned, Rods, ⅝ to 3 in. diameter, ₱ lb, net..... 20¢
Finished Piston Rods, ⅝ to 2½ in. diameter, ₱ lb net. 21¢
Other sizes and extreme lengths, special prices.

Spelter—

Duty: In Blocks or Pigs, 1¢ ₱ lb

Western Spelter..... 4.45@4½¢

Zinc.

Duty: Sheet, 2¢ ₱ lb.

600 lb casks..... 6¾¢ | Per lb..... 7¼¢

Lead.

Duty: Pigs and Bars and Old, 2½¢ ₱ lb. Pipe and Sheets, 2½¢ ₱ lb.

American Pig.....	4.60@4.62½¢
Bar.....	5½@5¾¢
Pipe.....	6½¢.....20% off
Tin Lined Pipe.....	12½¢.....20% off
Block Tin Pipe.....	40 ¢.....20% off
Sheet Lead, full rolls.....	7½¢.....20% off
Sheet Lead, cut.....	7¾¢.....20% off
Old Lead in exchange, 4½¢ ₱ lb.	

Solder.

¼ & ⅛, guaranteed.....	18¾@19¼¢
No. 1.....	15 @17½¢

Prices of Solder indicated by private brand vary according to composition.

Antimony—

Duty, ¾¢ ₱ lb.

Cookson.....	₱ lb 10½@11¢
Hallett's.....	₱ lb 8¾@9¼¢
U. S.....	₱ lb 8¾@9¼¢

Aluminum—

Duty: Crude, 8¢ ₱ lb. Plates, Sheets, Bars and Rods, 13¢ ₱ lb.

No. 1 Aluminum (guaranteed over 99% pure), in ingot for remelting:
Small lots..... ₱ lb 37¢
100-lb lots..... ₱ lb 35¢
No. 2 Aluminum (guaranteed to be over 90% pure), in ingots for remelting:
Small lots..... ₱ lb 34¢
100-lb lots..... ₱ lb 33¢

Aluminum Sheet, B. & S. gauge. 50 lb or more

Wider than	6-in.	14-in.	24-in.
And including	14-in.	24-in.	30-in.
	₱ lb.	₱ lb.	₱ lb.
Nos. 13 to 19.....	$0.42	$0.44	$0.47
No. 20.....	.44	.46	.49
Nos. 21 to 23.....	.46	.48	.51
No. 24.....	.46	.50	.53
No. 25.....	.47	.51	.54
No. 26.....	.47	.54	.59
No. 27.....	.48	.57	.62
No. 28.....	.48	.57	.64
No. 29.....	.49	.60	.69
No. 30.....	.50	.64	.77

Note.—Lots of less than 50 lb 5¢ ₱ lb extra.

Aluminum Wire, B. & S. Gauge.

Larger than No. 9, ₱ lb 40¢	No. 15..... ₱ lb 43¢
No. 9 to No. 10.. ₱ lb 40½¢	No. 17..... ₱ lb 50¢
No. 11..... ₱ lb 41 ¢	No. 18..... ₱ lb 55¢
No 12..... ₱ lb 41½¢	No. 19..... ₱ lb 60¢
No. 13..... ₱ lb 42 ¢	No. 20..... ₱ lb 65¢
No 14 ..... ₱ lb 42½¢	No. 21..... ₱ lb 85¢

Old Metals.

Dealers' Purchasing Prices Paid in New York.

Heavy Copper.....	₱ lb 15 ¢
Light and Tinned Copper.....	₱ lb 13½¢
Heavy Brass.....	₱ lb 10 ¢
Light Brass.....	₱ lb 8 ¢
Lead.....	₱ lb 4 ¢
Tea Lead.....	₱ lb 3½¢
Zinc.....	₱ lb 2½¢
No. 1 pewter.....	₱ lb 18½¢
No. 2 Pewter.....	₱ lb 9 ¢
Tin Plate scrap.....	₱ ton $6.00
Wrought Scrap Iron.....	₱ gross ton $10 50@11.00
Heavy Cast Scrap.....	₱ gross ton $10.00@10.50
Stove Plate Scrap.....	₱ gross ton $7.00@7.50
Burnt Iron.....	₱ gross ton $5.00@5.50